Department of Management Engineering - DTU Orbit (26/05/2018)

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Organisation profile

Education
We offer a range of courses and programmes within manufacturing, product design, production technology, strategy, economics, management, organisation, sociotechnical design, entrepreneurship and sustainability.

Research
Our main research areas are innovation, product development, production management, sustainability, construction management and operations research.

Industrial collaboration
We emphasise the transfer of knowledge between industry and academia. Research co-operation can take many forms: industrial PhD projects; research consortiums; innovation contracts, and collaboration agreements.

Publications:

Learning-by-doing: experience from 20 years of teaching LCA to future engineers
Purpose: In support of the sustainable development of our societies, future engineers should have elementary knowledge in sustainability assessment and use of life cycle assessment. Publications on pedagogical experience with teaching life cycle assessment (LCA) in high-level education are however scarce. Here, we describe and discuss 20 years of experience in teaching LCA at MSc level in an engineering university with the ambition to share our insights and inspire teaching of LCA as part of a university curriculum. Methods: We detail the design of an LCA course taught at the Technical University of Denmark since 1997. The course structure relies on (i) a structured combination of theoretical teaching, practical assignments and hands-on practice on LCA case studies, and (ii) the conduct of real-life LCA case studies in collaboration with companies or other organisations. Through the semester-long duration of the course, students from different engineering backgrounds perform full-fledged LCA studies in groups, passing through two iterations—a screening LCA supporting a more targeted LCA. Results and discussion: The course design, which relies on a learning-by-doing principle, is transparently described to inspire LCA teachers among the readers. Historical evolution and statistics about the course, including its 192 case studies run in collaboration with 105 companies and institutions, are analysed and serve as basis to discuss the benefits and challenges of its different components, such as the theory acquisition, the assignment work, the LCA software learning, the conduct of case studies, the merits of industrial collaborations and grading approaches. Conclusions: We demonstrate the win-win situation created by the setting of the course, in which the students are actively engaged and learn efficiently how to perform an LCA while the collaborating companies often get useful insights into their analysed case studies. The course can also be an eye opener for companies unfamiliar with LCA, who get introduced to life cycle thinking and the potential benefits of LCA. We have no hesitation in recommending industries and LCA teachers to engage into such collaborations even in the fundamental teaching of LCA techniques.
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.295 SNIP 0.977
Scopus rating (2001): SJR 0.478 SNIP 1.481
Scopus rating (2000): SJR 1.101 SNIP 1.864
Scopus rating (1999): SJR 0.421 SNIP 1.289
Original language: English
DOIs:
10.1007/s11367-018-1457-5
Links:
http://www.scopus.com/inward/record.url?scp=85044441924&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source-ID: 85044441924
Publication: Research - peer-review › Journal article – Annual report year: 2018

The Danish National Travel Survey - declaration of variables TU 2006-17, version 1

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU
Authors: Christiansen, H. (Intern), Warnecke, M. (Intern)
Number of pages: 154
Publication date: 6 Mar 2018

Publication information
Original language: English
Publisher: DTU Management
Main Research Area: Technical/natural sciences
Electronic versions:
DokTU0617v1eng.pdf
Source: PublicationPreSubmission
Source-ID: 144611029
Publication: Research › Dataset – Annual report year: 2018

Transportvaneundersøgelsen, Variabeldeklaration datasæt TU0617v1

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU
Authors: Christiansen, H. (Intern), Warnecke, M. (Intern)
Number of pages: 149
Publication date: 22 Feb 2018

Publication information
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Main Research Area: Technical/natural sciences
Electronic versions:
DokTU0617v1dk.pdf
Source: PublicationPreSubmission
Source-ID: 143901611
Publication: Research › Dataset – Annual report year: 2018

About This Book
To reach the UN sustainable development goal, there is a need for comprehensive and robust tools to help decision-making identify the solutions that best support sustainable development. The decisions must have a system perspective, consider the life cycle, and all relevant impacts caused by the solution. Life Cycle Assessment (LCA) is a tool that has these characteristics and the ambition with this book is to offer a comprehensive and up-to-date introduction to the tool and its underlying methodological considerations and potential applications. The book consists of five parts. The first part introduces LCA. The second part is a text book aiming at university students from undergraduate to PhD level, and professionals from industry and within policy making. It follows ISO 14040/14044 structure, draws upon a variety of LCA methods published over the years, especially the ILCD, and offers prescriptions and recommendations for all the most important methodological choices that you meet when performing an LCA. The third part introduces applications of LCA and life cycle thinking by policy- and decision-makers in government and industry. The fourth part is a Cookbook guiding you through the concrete actions to undertake when performing an LCA. The fifth part contains some appendices. The
book can be used as a text book, the chapter can be read as stand alone, and you can use the Cookbook as a manual on how to perform an LCA.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Hauschild, M. Z. (Intern), Rosenbaum, R. K. (Ekstern), Olsen, S. I. (Intern)
Pages: 3-8
Publication date: 2018

Host publication information
Title of host publication: Life Cycle Assessment: Theory and practice
Publisher: Springer
Chapter: 1
Main Research Area: Technical/natural sciences
Business and Management, Sustainability Management, Sustainable Development, Renewable and Green Energy, Manufacturing, Machines, Tools, Operating Procedures, Materials Treatment
DOIs:
10.1007/978-3-319-56475-3_1
Source: FindIt
Source-ID: 2373522943
Publication: Research - peer-review › Book chapter – Annual report year: 2017

Accelerating the clean energy revolution - perspectives on innovation challenges: DTU International Energy Report 2018

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Copenhagen Center for Health Technology, Office for Research and Relations, Dartmouth College
Authors: Jørgensen, B. H. (ed.) (Intern), Andersen, K. K. (ed.) (Intern), Wilson, E. J. (ed.) (Ekstern)
Number of pages: 111
Publication date: 2018

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Publisher: Technical University of Denmark (DTU)
ISBN (Electronic): 978-87-93458-57-4
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Publication: Research - peer-review › Report – Annual report year: 2018

Access over ownership: meeting facilities in Lyngby-Taarbæk Knowledge City

Purpose
This study aims to investigate the attitude towards shared space in an urban context with a particular focus on meeting facilities. The Lyngby-Taarbæk City of Knowledge is used as a case, as this organisation has a vision of sharing facilities to stimulate regional development.

Design/methodology/approach
The attitude towards shared space in the Lyngby-Taarbæk City of Knowledge is studied in a three-step qualitative research process. An initial survey investigated the City of Knowledge’s members’ attitude towards shared space in general, a workshop further explored motivations and practical needs and a second survey investigated the attitude towards shared meeting facilities. The Brinkø Typology of Shared Use of Space and Facilities is used as the theoretical framework for the study (Brinkø et al., 2015).

Findings
This study shows that the respondents are very positive towards the concept of shared
space but more reluctant when it comes to sharing own facilities. A majority of the informants are often using externally owned facilities for meetings and events and prefer professional meeting facilities to schools, universities and sports facilities. This points to a need for developing relevant service concepts, if a shared space strategy with focus on meeting facilities were to be used to increase the use rate of existing buildings not already intended for this use.

Originality/value
This study adds to the so far limited amount of scientific knowledge on the topic of shared space, by investigating the attitude towards shared space among a specific group of people, in relation to the use of external meeting facilities.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Campus Service
Authors: Nielsen, S. B. (Intern), Berg, R. B. (Intern)
Pages: 13-23
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Facilities
Volume: 36
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BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.06 SJR 0.421 SNIP 1.217
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.369 SNIP 1.028 CiteScore 0.84
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.447 SNIP 1.291 CiteScore 1.1
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.344 SNIP 1.184 CiteScore 0.73
ISI indexed (2013): ISI indexed no
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.361 SNIP 0.983 CiteScore 0.62
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.399 SNIP 0.734 CiteScore 0.66
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.339 SNIP 0.594
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.364 SNIP 0.701
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.446 SNIP 0.634
Scopus rating (2007): SJR 0.189 SNIP 0.368
Scopus rating (2006): SJR 0.305 SNIP 0.852
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.198 SNIP 0.29
A comparison of land use change accounting methods: seeking common grounds for key modeling choices in biofuel assessments

Five currently used methods to account for the global warming (GW) impact of the induced land-use change (LUC) greenhouse gas (GHG) emissions have been applied to four biofuel case studies. Two of the investigated methods attempt to avoid the need of considering a definite occupation -thus amortization period by considering ongoing LUC trends as a dynamic baseline. This leads to the accounting of a small fraction (0.8%) of the related emissions from the assessed LUC, thus their validity is disputed. The comparison of methods and contrasting case studies illustrated the need of clearly distinguishing between the different time horizons involved in life cycle assessments (LCA) of land-demanding products like biofuels. Absent in ISO standards, and giving rise to several confusions, definitions for the following time horizons have been proposed: technological scope, inventory model, impact characterization, amortization/occupation, plantation lifetime and harvesting frequency. It is suggested that the anticipated technical lifetime of biorefineries using energy crops as feedstock stands as the best proxy for the cut-off criterion of land's occupation period and the inventory modeling period. Top-down LUC models are suggested as a gross reference benchmark to evaluate LUC results from bottom-up models, since the former represent average GHG emissions from deforestation statistics at different spatial resolutions. Reporting LUC emissions per area and implementing a corporate accounting system that ascribes deforestation emissions to responsible companies could avoid the critical uncertainty related to yield estimations.
Addressing bystander exposure to agricultural pesticides in life cycle impact assessment

Residents living near agricultural fields may be exposed to pesticides drifting from the fields after application to different field crops. To address this currently missing exposure pathway in life cycle assessment (LCA), we developed a modeling framework for quantifying exposure of bystanders to pesticide spray drift from agricultural fields. Our framework consists of three parts addressing: (1) loss of pesticides from an agricultural field via spray drift; (2) environmental fate of pesticide in air outside of the treated field; and (3) exposure of bystanders to pesticides via inhalation. A comparison with measured data in a case study on pesticides applied to potato fields shows that our model gives good predictions of pesticide air concentrations. We compared our bystander exposure estimates with pathways currently included in LCA, namely aggregated inhalation and ingestion exposure mediated via the environment for the general population, and general population exposure via ingestion of pesticide residues in consumed food crops. The results show that exposure of bystanders is limited relative to total population exposure from ingestion of pesticide residues in crops, but that the exposure magnitude of individual bystanders can be substantially larger than the exposure of populations not living in the proximity to agricultural fields. Our framework for assessing bystander exposure to pesticide applications closes a relevant gap in the exposure assessment included in LCA for agricultural pesticides. This inclusion aids decision-making based on LCA as previously restricted knowledge about exposure of bystanders can now be taken into account.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Universite de Montpellier, Veolia Environnement
Authors: Ryberg, M. W. (Intern), Rosenbaum, R. K. (Ekstern), Mosqueron, L. (Ekstern), Fantke, P. (Intern)
Pages: 541-549
Publication date: 2018
Main Research Area: Technical/natural sciences

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Journal: Chemosphere
Volume: 197
ISSN (Print): 0045-6535
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.39 SJR 1.417 SNIP 1.606
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.51 SNIP 1.57 CiteScore 4.04
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.593 SNIP 1.651 CiteScore 3.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.724 SNIP 1.767 CiteScore 3.92
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.818 SNIP 1.623 CiteScore 3.5
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.961 SNIP 1.515 CiteScore 3.61
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.867 SNIP 1.421
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Addressing Funding Issues for Danish Mental-Health NGOs

Purpose – Research has shown that non-governmental organizations (NGOs) often fail to appreciate that in their market, donors represent clients. Moreover, the unstable income characteristics of NGOs emphasize the importance of conducting market analysis specific to such organisations. This paper aims to identify key factors that influence fundraising success for mental-health NGOs and determine the most advantageous fundraising approach based on a mixed-methods-study that encompass a literature review, two surveys and a case study.

Design/methodology/approach - Based on a structured literature review, the most important factors affecting NGO fundraising are unified into a decision-making framework. This framework is tested using a triangulation approach by combining quantitative and qualitative methods. The former based on a general survey and the latter based on a case study.

Findings - The results highlight 15 key factors determining the optimal approach for mental-health NGOs when fundraising in Denmark.

Practical implications - The decision-making framework can be used to assess the most advantageous fundraising approach based on a variety of internal and external circumstances.

Originality/value - While private firms develop exhaustive market analyses, NGOs often lack analyses to cope with fluctuating environments and changing customer needs. This paper addresses this gap by identifying key factors that determine an optimal fundraising approach and proposes a novel decision-making framework for practitioners.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Management Science, Operations Management, Technical University of Denmark
Authors: Aguilar, N. F. (Ekstern), Herbert-Hansen, Z. N. L. (Intern)
Publication date: 2018
Main Research Area: Technical/natural sciences
Adolescents' associations between travel behaviour and environmental impact: A qualitative study based on the Norm-Activation Model

The negative environmental impact of car-dependent daily transport is well known. Young people of today are the potential drivers of the future and their mode choice will influence the environment for many years. This study explores the associations drawn between daily transport and environmental impact among 15-year-old Danish adolescents. We conducted 50 in-depth interviews and analysed them using a data-driven inductive thematic approach. We interpret differences in pro-environmental awareness and engagement on the background of the Norm-Activation Model (Schwartz, 1977). Based on their personal norm and the denial of consequences and responsibility of own behaviour, we identified five sub-groups of adolescents called Environmentalists, Pragmatics, Indifferent, De-emphasisers, and Deniers. Results indicate a need for measures to increase adolescents' awareness and acceptance of daily transport as a relevant issue in relation to sustainability. Such measures should include tangible feedback in a daily context while taking different coping strategies with regard to climate change into account.

A fix-and-optimize matheuristic for university timetabling

University course timetabling covers the task of assigning rooms and time periods to courses while ensuring a minimum violation of soft constraints that define the quality of the timetable. These soft constraints can have attributes that make it difficult for mixed-integer programming solvers to find good solutions fast enough to be used in a practical setting. Therefore, matheuristics have dominated this area despite the fact that mixed-integer programming solvers have improved tremendously over the last decade. This paper presents a matheuristic where the MIP-solver is guided to find good feasible solutions faster. This makes the matheuristic applicable in practical settings, where mixed-integer programming solvers do not perform well. To the best of our knowledge this is the first matheuristic presented for the
University Course Timetabling problem. The matheuristic works as a large neighborhood search where the MIP solver is used to explore a part of the solution space in each iteration. The matheuristic uses problem specific knowledge to fix a number of variables and create smaller problems for the solver to work on, and thereby iteratively improves the solution. Thus we are able to solve very large instances and retrieve good solutions within reasonable time limits. The presented framework is easily extendable due to the flexibility of modeling with MIPs; new constraints and objectives can be added without the need to alter the algorithm itself. At the same time, the matheuristic will benefit from future improvements of MIP solvers. The matheuristic is benchmarked on instances from the literature and the 2nd International Timetabling Competition (ITC2007). Our algorithm gives better solutions than running a state-of-the-art MIP solver directly on the model, especially on larger and more constrained instances. Compared to the winner of ITC2007, the matheuristic performs better. However, the most recent state-of-the-art metaheuristics outperform the matheuristic.
A flow-first route-next heuristic for liner shipping network design

Having a well-designed liner shipping network is paramount to ensure competitive freight rates, adequate capacity on trade-lanes, and reasonable transportation times. The most successful algorithms for liner shipping network design make use of a two-phase approach, where they first design the routes of the vessels, and then flow the containers through the network in order to calculate how many of the customers' demands can be satisfied, and what the imposed operational costs are. In this article, we reverse the approach by first flowing the containers through a relaxed network, and then design routes to match this flow. This gives a better initial solution than starting from scratch, and the relaxed network reflects the ideas behind a physical internet of having a distributed multi-segment intermodal transport. Next, the initial solution is improved by use of a variable neighborhood search method, where six different operators are used to modify the network. Since each iteration of the local search method involves solving a very complex multi-commodity flow problem to route the containers through the network, the flow problem is solved heuristically by use of a fast Lagrange heuristic. Although the Lagrange heuristic for flowing containers is 2–5% from the optimal solution, the solution quality is sufficiently good to guide the variable neighborhood search method in designing the network. Computational results are reported, showing that the developed heuristic is able to find improved solutions for large-scale instances from LINER-LIB, and it is the first heuristic to report results for the biggest WorldLarge instance.
A framework for dynamic rescheduling problems

Academic scheduling problems usually assume deterministic and known in advance data. However, this situation is not often met in practice, since data may be subject to uncertainty and it may change over time. In this paper, we introduce a general rescheduling framework to address such dynamic scheduling problems. The framework consists mainly of a controller that makes use of a solver. The solver can assume deterministic and static data, whereas the controller deals with the uncertain and dynamic aspects of the problem and it is in charge of triggering the solver when needed and when possible. Extensive tests are carried out for the job shop problem, and we demonstrate that the framework can be used to ascertain the benefit of using rescheduling over static methods, decide between rescheduling policies, and finally we show that it can be applied in real-life applications due to a low time overhead. The framework is general enough to be applied to any scheduling environment where a fast enough deterministic solver exists.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Management Science, Operations Research, Universita degli Studi di Siena
Authors: Larsen, R. (Intern), Pranzo, M. (Ekstern)
Pages: 1-18
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: International Journal of Production Research
ISSN (Print): 0020-7543
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.67 SJR 1.463 SNIP 1.416
BFI (2015): BFI-level 1
This chapter critically assesses Africa–Europe collaborations on climate change research and innovation. Its authors argue that the complexity of research and innovation challenges on this topic calls for subtler collaborative and evaluation programmes. More importantly, they emphasise the need for greater harmonisation between scientific and political priorities on climate change, and point out that project goals should be more precisely defined, so as to ensure that results can be measured concretely and solutions can be progressively improved. In the absence of this clarity, they argue, climate change research and innovation programmes run the risk of being reduced to mere rhetorical statements.
A hybrid approach for biobjective optimization

A large number of the real world planning problems which are today solved using Operations Research methods are actually multiobjective planning problems, but most of them are solved using singleobjective methods. The reason for converting, i.e. simplifying, multiobjective problems to singleobjective problems is that no standard multiobjective solvers exist and specialized algorithms need to be programmed from scratch. In this article we will present a hybrid approach, which operates both in decision space and in objective space. The approach enables massive efficient parallelization and can be used to a wide variety of biobjective Mixed Integer Programming models. We test the approach on the biobjective extension of the classic traveling salesman problem, on the standard datasets, and determine the full set of nondominated points. This has only been done once before (Florios and Mavrotas, 2014), and in our approach we do it in a fraction of the time.

General information
State: Accepted/In press
A Long-Term Strategy to Decarbonise the Danish Inland Passenger Transport Sector

This study applies a novel modelling framework to assess how alternative policies may contribute to a fossil-free transport sector for Denmark and the potential contribution they may have to a well-below 2Â°C world. The approach adopted consists of linking an energy system optimisation model, TIMES-DKMS, with a private car simulation model, the Danish Car Stock Model. The results of this study include the magnitude of CO2 abatement presented alongside the corresponding change in tax revenue generated through combinations of policies focusing on the derogation of motor taxes for low emission vehicles and banning the sale of the internal combustion engines. The resulting cumulative emissions from the Danish energy system are also compared to a range of national carbon budgets, calculated to adhere to various levels of global temperature rise at different levels of confidence. The results indicate that a ban on the sale of the internal combustion engines enforced in 2025 would enable the largest cut in cumulative greenhouse gas emissions of all the policies considered. However, none of the policies analysed comply with Denmarkâ€™s carbon budget capable of
maintaining the increase of global temperature limited to 1.5 Å Å°C.

**General information**
State: Published
Organisations: Department of Management Engineering, Systems Analysis, University College Cork, E4SMA
Authors: Tattini, J. (Intern), Mulholland, E. (Ekstern), Venturini, G. (Intern), Ahanchian, M. (Intern), Gargiulo, M. (Ekstern), Balyk, O. (Intern), Karlsson, K. B. (Intern)
Pages: 137-153
Publication date: 2018

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Title of host publication: Limiting Global Warming to Well Below 2 °C: Energy System Modelling and Policy Development
Publisher: Springer

A matheuristic for transfer synchronization through integrated timetabling and vehicle scheduling
Long transfer times often add unnecessary inconvenience to journeys in public transport systems. Synchronizing relevant arrival and departure times through small timetable modifications could reduce excess transfer times, but may also directly affect the operational costs, as the timetable defines the set of feasible vehicle schedules. Therefore better results in terms of passenger service, operational costs, or both, could be obtained by solving these problems simultaneously.

**Publication information**
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management, Transport DTU, Operations Research, University of Amsterdam
Authors: Fonseca, J. P. (Intern), van der Hurk, E. (Intern), Roberti, R. (Ekstern), Larsen, A. (Intern)
Pages: 128-149
Publication date: 2018
Main Research Area: Technical/natural sciences
Analysis and Visualization of Urban Emission Measurements in Smart Cities

Cities worldwide aim to reduce their greenhouse gas emissions and improve air quality for their citizens. Therefore, there is a need to implement smart city approaches to monitor, model, and understand local emissions to better guide these actions. We present our approach that deploys a number of low-cost sensors through a wireless Internet of Things (IoT) backbone and is thus capable of collecting high-granular data. Based on a flexible architecture, we built an ecosystem of data management and data analytics including processing, integration, analysis, and visualization as well as decision-support systems for cities to better understand their emissions. Our prototype system has so far been tested in two Scandinavian cities. We present this system and demonstrate how to collect, integrate, analyze, and visualize real-time air quality data.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Norwegian University of Science and Technology, AIA Science AS
Authors: Ahlers, D. (Ekstern), Kraemer, F. A. (Ekstern), Braten, A. E. (Ekstern), Liu, X. (Intern), Anthonisen, F. (Ekstern), Driscoll, P. A. (Forskerdatabase), Krogstie, J. (Ekstern)
Number of pages: 4
Publication date: 2018

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Main Research Area: Technical/natural sciences
Conference: 21st International Conference on Extending Database Technology (EDBT), Vienna, Austria, 26/03/2018 - 26/03/2018
Electronic versions:
ctt_data_analysis_ecosystem_2_.pdf
Links:
Application of data clustering to railway delay pattern recognition

K-means clustering is employed to identify recurrent delay patterns on a high traffic railway line north of Copenhagen, Denmark. The clusters identify behavioral patterns in the very large ("big data") data sets generated automatically and continuously by the railway signal system. The results reveal where corrective actions are necessary, showing where recurrent delay patterns take place. Delay profiles and delay-change profiles are generated from timestamps to compare different train runs, and to partition the set of observations into groups of similar elements. K-means clustering can identify and discriminate different patterns affecting the same stations, which is otherwise difficult in previous approaches based on visual inspection. Classical methods of univariate analysis do not reveal these patterns. The demonstrated methodology is scalable and can be applied to any system of transport.
A qualitative evaluation approach for energy system modelling frameworks

The research field of energy system analysis is faced with the challenge of increasingly complex systems and their sustainable transition. The challenges are not only on a technical level but also connected to societal aspects. Energy system modelling plays a decisive role in this field, and model properties define how useful it is in regard to the existing challenges. For energy system models, evaluation methods exist, but we argue that many decisions upon properties are rather made on the model generator or framework level. Thus, this paper presents a qualitative approach to evaluate frameworks in a transparent and structured way regarding their suitability to tackle energy system modelling challenges.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Center for Sustainable Energy Systems (ZNES), Reiner-Lemoine-Institut gGmbH
Authors: Wiese, F. (Intern), Hilpert, S. (Ekstern), Kaldemeyer, C. (Ekstern), Pleßmann, G. (Ekstern)
Number of pages: 16
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Energy, Sustainability and Society
Volume: 8
Issue number: 1
ISSN (Print): 2192-0451
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Scopus rating (2015): CiteScore 1.81
Scopus rating (2014): CiteScore 1.18
Scopus rating (2013): CiteScore 0.73
Scopus rating (2012): CiteScore 0.14
Original language: English
Energy system analysis, Model challenges, Open science, Open source, Energy modelling framework, Oemof
Electronic versions:
filestore_1_.pdf
DOIs:
10.1186/s13705-018-0154-3

Bibliographical note
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Source: FindIt
Source-ID: 2398419089
Publication: Research - peer-review › Journal article – Annual report year: 2018

A review of measured bioaccumulation data in terrestrial plants for organic chemicals: Metrics, variability and the need for standardized measurement protocols: Review of bioaccumulation data in terrestrial plants

Quantifying the transfer of organic chemicals from the environment into terrestrial plants is essential for assessing human and ecological risks, using plants as environmental contamination biomarkers, and predicting phytoremediation effectiveness. Experimental data describing chemical uptake by plants are often expressed as ratios of chemical concentrations in the plant compartments of interest (e.g., leaves, shoots, roots, xylem sap) to that in the exposure medium (e.g., soil, soil pore water, hydroponic solution, air). These ratios are generally referred to as bioconcentration
factors (BCFs) but have also been named for the specific plant compartment sampled, such as root concentration factors (RCFs), leaf concentration factors (LCFs), or transpiration stream (xylem sap) concentrations factors (TSCFs). We reviewed over 350 papers to develop a database with 7,049 entries of measured bioaccumulation data for 310 organic chemicals and 112 terrestrial plant species. Various experimental approaches have been used; therefore, inter-study comparisons and data quality evaluations are difficult. Key exposure and plant growth conditions were often missing, and units were often unclear or not reported. The lack of comparable high confidence data also limits model evaluation and development. Standard test protocols, or at a minimum, standard reporting guidelines, for the measurement of plant uptake data are recommended to generate comparable, high-quality data that will improve mechanistic understanding of organic chemical uptake by plants. This article is protected by copyright. All rights reserved.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Utah State University, Environment and Climate Change Canada, Hill Air Force Base, ExxonMobil Biomedical Sciences, University of Toronto
Authors: Doucette, W. J. (Ekstern), Shunthirasingham, C. (Ekstern), Dettenmaier, E. M. (Ekstern), Zaleski, R. T. (Ekstern), Fantke, P. (Intern), Arnot, J. A. (Ekstern)
Pages: 21-33
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Environmental Toxicology and Chemistry
Volume: 37
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Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.74 SJR 1.19 SNIP 1.031
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.446 SNIP 1.055 CiteScore 3
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.506 SNIP 1.129 CiteScore 2.89
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.653 SNIP 1.092 CiteScore 2.88
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.642 SNIP 1.107 CiteScore 2.81
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.937 SNIP 1.168 CiteScore 3.05
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.708 SNIP 0.997
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.613 SNIP 1.047
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Assessing transformational change potential: the case of the Tunisian cement Nationally Appropriate Mitigation Action (NAMA)

To effectively address the root causes of carbon lock-in across developing countries, Nationally Appropriate Mitigation Actions (NAMAs) with transformational change characteristics are being supported by donors and finance mechanisms as a means to achieve ambitious nationally determined contributions (NDCs). However, there is still a scarcity of empirical studies on how transformational change policies and actions are designed and supported in practice. This article addresses such a gap in knowledge by combining theoretical insights from the multi-level perspective and transitions management literature to examine a donor-supported cement sector NAMA in Tunisia developed during 2012–2013. A narrative is constructed to analyse the adequacy of the NAMA design to promote structural shifts towards low carbon development in the cement sector. Data collection is based on semi-structured interviews and documentation gathered during field work in Tunisia 2014–2015. The study finds that the NAMA design is not likely to lead to transformational change of the cement sector, since underlying factors accounting for lock-in are not properly tackled. Although the NAMA has enabled new and promising sectoral partnerships across the cement sector, the analysis suggests that the NAMA's transformational potential is currently limited by a number of factors not being adequately addressed. Measures are proposed to reorient the NAMA towards promoting system innovation, building on further research and experimentation with the policy entrepreneurial role of donors.

General information
State: Published
Organisations: UNEP DTU Partnership, Department of Management Engineering
Authors: Boodoo, Z. (Intern), Olsen, K. H. (Intern)
Pages: 35-45
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Climate Policy
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Issue number: 1
ISSN (Print): 1469-3062
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
Utilities in larger cities have to make complex decisions planning future investments in urban water infrastructure. Changes are driven by physical water stress or political targets for environmental water flows e.g. through the implementation of the European water framework directive. To include these environmental, economic and social sustainability dimensions we introduce a novel multi-criteria assessment method for evaluation of water supply technologies. The method is presented and demonstrated for four alternatives for water supply based on groundwater, rain- & stormwater or seawater developed for augmenting Copenhagen’s current groundwater based water supply. To identify the most sustainable technology, we applied rank order distribution weights to a multi-criteria decision analysis to combine the impact assessments of environment, economy and society. The three dimensions were assessed using 1) life-cycle assessment, 2) cost calculations taking operation and maintenance into account and 3) the multi-criteria decision analysis method Analytical hierarchy process. Specialists conducted the life-cycle assessment and cost calculations and the multi-criteria decision analyses were based on a stakeholder workshop gathering stakeholders relevant for the specific
case. The workshop reached consensus on three sets of ranked criteria. Each set represented stakeholder perspectives with first priority given to one of the three sustainability dimensions or categories. The workshop reached consensus and when the highest weight was assigned to the environmental dimension of sustainability then the alternative of 'Rain- & stormwater harvesting' was the most sustainable water supply technology; when the highest weight was assigned to the economy or society dimensions then an alternative with 'Groundwater abstraction extended with compensating actions' was considered the most sustainable water supply technology. Across all three sets of ranked weights, the establishment of new well fields is considered the least sustainable alternative.

**General information**

State: Published
Organisations: Department of Environmental Engineering, Urban Water Systems, Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Godskesen, B. (Intern), Hauschild, M. Z. (Intern), Albrechtsen, H. (Intern), Rygaard, M. (Intern)
Number of pages: 10
Pages: 399-408
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Main Research Area: Technical/natural sciences

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Journal: Science of the Total Environment
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Ratings:
- BFI (2018): BFI-level 2
- Web of Science (2018): Indexed yes
- BFI (2017): BFI-level 2
- Web of Science (2017): Indexed yes
- BFI (2016): BFI-level 2
- Scopus rating (2016): CiteScore 5.09 SJR 1.621 SNIP 1.849
- Web of Science (2016): Indexed yes
- BFI (2015): BFI-level 2
- Scopus rating (2015): SJR 1.674 SNIP 1.642 CiteScore 4.33
- Web of Science (2015): Indexed yes
- BFI (2014): BFI-level 2
- Scopus rating (2014): SJR 1.635 SNIP 1.847 CiteScore 4.2
- Web of Science (2014): Indexed yes
- BFI (2013): BFI-level 2
- Scopus rating (2013): SJR 1.527 SNIP 1.759 CiteScore 3.73
- ISI indexed (2013): ISI indexed yes
- Web of Science (2013): Indexed yes
- BFI (2012): BFI-level 2
- Scopus rating (2012): SJR 1.773 SNIP 1.811 CiteScore 3.7
- ISI indexed (2012): ISI indexed yes
- Web of Science (2012): Indexed yes
- BFI (2011): BFI-level 2
- Scopus rating (2011): SJR 1.798 SNIP 1.681 CiteScore 3.61
- ISI indexed (2011): ISI indexed yes
- Web of Science (2011): Indexed yes
- BFI (2010): BFI-level 2
- Scopus rating (2010): SJR 1.644 SNIP 1.513
- Web of Science (2010): Indexed yes
- BFI (2009): BFI-level 1
- Scopus rating (2009): SJR 1.571 SNIP 1.602
- BFI (2008): BFI-level 2
- Scopus rating (2008): SJR 1.463 SNIP 1.501
- Web of Science (2008): Indexed yes
- Scopus rating (2007): SJR 1.407 SNIP 1.491
- Web of Science (2007): Indexed yes
A Strategic View of University Timetabling

University Timetabling has traditionally been studied as an operational problem where the goal is to assign lectures to rooms and timeslots and create timetables of high quality for students and teachers. Two other important decision problems arise before this can be solved: what rooms are necessary, and in which teaching periods? These decisions may have a large impact on the resulting timetables and are rarely changed or even discussed. This paper focuses on solving these two strategic problems and investigates the impact of these decisions on the quality of the resulting timetables.

The relationship and differences between operational, tactical and strategic timetabling problems are reviewed. Based on the formulation of curriculum-based course timetabling and data from the Second International Timetabling Competition (ITC 2007), three new bi-objective mixed-integer models are formulated. We propose an algorithm based on the -constraint method to solve them. The algorithm can be used to analyze the impact of having different resources available on most timetabling problems. Finally, we report results on how the three objectives - room, teaching periods and quality - influence one another.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, University of Auckland
Authors: Lindahl, M. (Intern), Mason, A. (Ekstern), Stidsen, T. J. R. (Intern), Sørensen, M. (Intern)
Pages: 35-45
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: European Journal of Operational Research
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ISSN (Print): 0377-2217
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
A Survey on Robustness in Railway Planning

Planning problems in passenger railway range from long term strategic decision making to the detailed planning of operations. Operations research methods have played an increasing role in this planning process. However, recently more attention has been given to considerations of robustness in the quality of solutions to individual planning problems, and of operations in general. Robustness in general is the capacity for some system to absorb or resist changes. In the context of railway robustness it is often taken to be the capacity for operations to continue at some level when faced with a disruption.
such as delay or failure. This has resulted in more attention given to the inclusion of robustness measures and objectives in individual planning problems, and to the providing of tools to ensure operations continue under disrupted situations. In this paper we survey the literature on robustness in railway planning problems, considering how robustness is conceptualized and modelled for the individual problems of railway, the degree to which an overall railway robustness concept is present, and consider the future directions of robustness in railway planning.

**General information**

State: Published  
Organisations: Department of Management Engineering, Management Science, Operations Research, Transport DTU  
Authors: Lusby, R. M. (Intern), Larsen, J. (Intern), Bull, S. H. (Intern)  
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Web of Science (2018): Indexed yes  
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BFI (2016): BFI-level 1  
Scopus rating (2016): CiteScore 3.83 SJR 2.505 SNIP 2.339  
Web of Science (2016): Indexed yes  
BFI (2015): BFI-level 1  
Scopus rating (2015): SJR 2.334 SNIP 2.412 CiteScore 3.59  
Web of Science (2015): Indexed yes  
BFI (2014): BFI-level 1  
Scopus rating (2014): SJR 2.186 SNIP 2.485 CiteScore 3.21  
Web of Science (2014): Indexed yes  
BFI (2013): BFI-level 1  
Scopus rating (2013): SJR 2.346 SNIP 2.735 CiteScore 3.25  
ISI indexed (2013): ISI indexed yes  
Web of Science (2013): Indexed yes  
BFI (2012): BFI-level 1  
Scopus rating (2012): SJR 2.418 SNIP 2.588 CiteScore 3.01  
ISI indexed (2012): ISI indexed yes  
Web of Science (2012): Indexed yes  
BFI (2011): BFI-level 1  
Scopus rating (2011): SJR 2.401 SNIP 2.441 CiteScore 3.02  
ISI indexed (2011): ISI indexed yes  
Web of Science (2011): Indexed yes  
BFI (2010): BFI-level 1  
Scopus rating (2010): SJR 2.477 SNIP 2.435  
Web of Science (2010): Indexed yes  
BFI (2009): BFI-level 1  
Scopus rating (2009): SJR 2.326 SNIP 2.577  
Web of Science (2009): Indexed yes  
BFI (2008): BFI-level 1  
Scopus rating (2008): SJR 1.739 SNIP 1.984  
Web of Science (2008): Indexed yes  
Scopus rating (2007): SJR 1.679 SNIP 2.041  
Web of Science (2007): Indexed yes  
Scopus rating (2006): SJR 1.299 SNIP 2.023
A Typology for Climate Change Adaptation: Event Magnitudes, Spatial Scale and Goals

General information
State: Published
Organisations: Department of Environmental Engineering, Urban Water Systems, Department of Management Engineering, Technology and Innovation Management
Authors: Madsen, H. M. (Intern), Andersen, M. M. (Intern), Rygaard, M. (Intern), Mikkelsen, P. S. (Intern)
Pages: 34-34
Publication date: 2018

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Title of host publication: Danish Water Forum Annual Water Conference 2018 - abstract book
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Electronic versions:
Abstract book
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2018

Balmorel open source energy system model
As the world progresses towards a cleaner energy future with more variable renewable energy sources, energy system models are required to deal with new challenges. This article describes design, development and applications of the open source energy system model Balmorel, which is a result of a long and fruitful cooperation between public and private institutions within energy system research and analysis. The purpose of the article is to explain the modelling approach, to highlight strengths and challenges of the chosen approach, to create awareness about the possible applications of Balmorel as well as to inspire to new model developments and encourage new users to join the community. Some of the key strengths of the model are the flexible handling of the time and space dimensions and the combination of operation and investment optimisation. Its open source character enables diverse, worldwide applications for exploratory energy scenarios as well as policy analysis as the applications outlined demonstrate. The existing functionality and structural suitability for extensions make it a useful tool for assessing challenges of the ongoing energy transitions. Numerous model extensions have been developed as different challenges to the energy transition have arisen. One of these includes the option of running the model with unit commitment. To meet new challenges, further development is needed and consequently the article outlines suggestions for future development, such as including transport of local biomass as part of the optimisation and speeding up the model.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Tallinn University of Technology, Norwegian University of Life Sciences, RAM-lose
Authors: Wiese, F. (Intern), Bramstoff, R. (Intern), Koduvere, H. (Ekstern), Pizarro Alonso, A. R. (Intern), Balyk, O. (Intern), Kirkerud, J. G. (Ekstern), Tveten, Å. G. (Ekstern), Bolkesjø, T. F. (Ekstern), Münster, M. (Intern), Ravn, H. V. (Ekstern)
Pages: 26-34
Publication date: 2018
Main Research Area: Technical/natural sciences
In this paper we applied Benders’ decomposition to the Curriculum-Based Course Timetabling (CBCT) problem. The objective of the CBCT problem is to assign a set of lectures to time slots and rooms. Our approach was based on segmenting the problem into time scheduling and room allocation problems. The Benders’ algorithm was then employed to generate cuts that connected the time schedule and room allocation. We generated only feasibility cuts, meaning that most of the solutions we obtained from a mixed integer programming solver were infeasible, therefore, we also provided a heuristic in order to regain feasibility.

We compared our algorithm with other approaches from the literature for a total of 32 data instances. We obtained a lower bound on 23 of the instances, which were at least as good as the lower bounds obtained by the state-of-the-art, and on eight of these, our lower bounds were higher. On two of the instances, our lower bound was an improvement of the currently best-known. Lastly, we compared our decomposition to the model without the decomposition on an additional six instances, which are much larger than the other 32. To our knowledge, this was the first time that lower bounds were calculated for these six instances.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Department of Applied Mathematics and Computer Science, MaCom A/S
Authors: Bagger, N. F. (Intern), Sørensen, M. (Ekstern), Stidsen, T. R. (Intern)
Pages: 178-189
Publication date: 2018
Main Research Area: Technical/natural sciences
The use of variable renewable energy sources will increase in the Nordic and Baltic countries in the future. This will call for increased flexibility in the electricity market to ensure both high energy security and efficient use of renewable power in all circumstances. The barriers and hence also policies to energy system flexibility are numerous. In this brief, we focus on policy recommendations for two important barriers to flexibility in the Nordic electricity market, namely insufficient market signals to some stakeholders, and uneven market frameworks for different renewable energy resources. We present seven major recommendations, which could mitigate the market barriers to flexibility. A central recommendation is to have better tariffs for electricity and grid use to promote flexibility. This would improve the coupling of access renewable power to other sectors such as heat, transport, and gas, which has a large potential for increased flexibility.
Beyond effectuation: Analysing the transformation of business ideas into ventures using actor-network theory*

Purpose

The purpose of this paper is to show that the entrepreneurial project ongoingly is transformed. Empirically, three defining junctions demonstrate the malleability of the entrepreneurial project in perpetual action, expanding beyond effectuation theory on what constitutes given means, affordable loss, and other key concepts from this theoretical perspective. Drawing upon actor-network theory (ANT), this study demonstrates how different framing and support devices implicate different human and non-human actors in changing interpositions within the entrepreneurial process.

Design/methodology/approach

This study uses a longitudinal case study design. The case provides an overview of a new business’s emergence based on three identified translations, each representing critical junctures in the business’s development. An ethnographic approach is selected, which combines observations with qualitative interviews. This design allows the authors to focus on how the project emerges and is continuously supported by allies but is sometimes not supported by various human and non-human actors.

Findings

This study demonstrates that the entrepreneurial project undertaken by the entrepreneurial network changes as new humans or non-humans become part of it. Including a resource in the network means simultaneously changing the network. This interactionism shows that what sparks interest or attracts resources to a business idea is not simply an influx of additional resources but is simultaneously a dynamic definition of the entrepreneurial endeavour.

Originality/value

This paper examines how ideas are transformed into business ventures by using the ANT to expand understanding from effectuation theory. This shows that means, for instance, are not given but are co-created by the process of translation. In addition, which losses are affordable can be determined by the process within which the entrepreneur frames the project and manages to associate allies within and into the network.

* Beyond effectuation: Analysing the transformation of business ideas into ventures using actor-network theory

** International Journal of Entrepreneurial Behavior & Research

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Issue number: 1
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Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Biased Decision Making in Realistic Extra-Procedural Nuclear Control Room Scenarios

In normal operations and emergency situations, operators of nuclear control rooms rely on procedures to guide their decision making. However, in emergency situations, where several interacting problems can cause unpredictable adverse effects, these procedures may be insufficient in guiding operators to safe shutdown of the power plant. Little is known about the decision making strategies that operators employ in these extra-procedural situations. To address this, a realistic simulation study was conducted with five crews of active, licensed nuclear operators to see the behavioural patterns that occur when procedures are not sufficient. This paper, a re-analysis of a dataset collected for a different study, investigates how the design and existence of procedures influence, and possibly bias, decision making strategies. We found evidence that operators were affected by confirmation bias, and that, in some cases, the mismatch between their home power plant and the simulated power plant made them commit errors due to misapplied expertise. We further found that this effect was amplified by the existence and design of the procedures used. Based on these findings, we suggest that designers may improve safety by creating procedures that bear the risks of these biases in mind, or by specifically aiming to debias the users. Avenues for debiasing through design are discussed.

General information

State: Accepted/In press
Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology
Authors: Andersen, E. (Intern), Kozin, I. (Intern), Maier, A. (Intern)
Publication date: 2018
Event: Abstract from 8th International Conference on Design Computing and Cognition, Milano, Italy.
Main Research Area: Technical/natural sciences
Source: PublicationPreSubmission
Source-ID: 145301358
Publication: Research - peer-review › Journal article – Annual report year: 2018
Bikeability – Urban structures supporting cycling. Effects of local, urban and regional scale urban form factors on cycling from home and workplace locations in Denmark

This study applies micro-level transport survey data to assess the significance of Bikeability variables on the probability of cycling in trips to or from residential and workplace locations. The data and analysis were prepared to include measures at different spatial scales, including measures of density/accessibility and infrastructure provision for network distances from up to 1 km to up to 5 km from the origin of a trip, as well as the regional position of the city. The probability of cycling is affected by urban structure variables at the local, urban and regional scale. The local scale, which includes the positive effects from population density and cycling infrastructures, is the most important in influencing cycling, but there are substantial additional contributions from access to retail and train stations within a range of 3–4 km, as well as from the relative size of the city within the region. The effect of the regional scale most likely reflects the reliance upon motorized modes to connect to distant important nodes. Factors at the local, urban and regional scales may pull cycling in opposite directions and thus all need to be considered to adequately assess the possibilities for promoting cycling in an urban area or neighbourhood.

General information
State: Published
Organisations: Department of Transport, Transport policy and behaviour, University of Copenhagen
Authors: Nielsen, T. A. S. (Intern), Skov-Petersen, H. (Ekstern)
Pages: 36-44
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Transport Geography
Volume: 69
ISSN (Print): 0966-6923
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.05 SJR 1.558 SNIP 1.976
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.733 SNIP 1.746 CiteScore 2.89
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.962 SNIP 2.208 CiteScore 3.06
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.684 SNIP 2.131 CiteScore 2.87
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.59 SNIP 2.044 CiteScore 2.58
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.353 SNIP 2.457 CiteScore 2.62
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.237 SNIP 1.979
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.247 SNIP 1.822
BFI (2008): BFI-level 1
Biodiversity of soil bacteria exposed to sub-lethal concentrations of phosphonium-based ionic liquids: Effects of toxicity and biodegradation

Little is known about the effect of ionic liquids (ILs) on the structure of soil microbial communities and resulting biodiversity. Therefore, we studied the influence of six trihexyl(tetradecyl)phosphonium ILs (with either bromide or various organic anions) at sublethal concentrations on the structure of microbial community present in an urban park soil in 100-day microcosm experiments. The biodiversity decreased in all samples (Shannon's index decreased from 1.75 down to 0.74 and OTU's number decreased from 1399 down to 965) with the largest decrease observed in the microcosms spiked with ILs where biodegradation extent was higher than 80%. (i.e. [P66614][Br] and [P66614][2,4,4]). Despite this general decrease in biodiversity, which can be explained by ecotoxic effect of the ILs, the microbial community in the microcosms was enriched with Gram-negative hydrocarbon-degrading genera e.g. Sphingomonas. It is hypothesized that, in addition to toxicity, the observed decrease in biodiversity and change in the microbial community structure may be explained by the primary biodegradation of the ILs or their metabolites by the mentioned genera, which outcompeted other microorganisms unable to degrade ILs or their metabolites. Thus, the introduction of phosphonium-based ILs into soils at sub-lethal concentrations may result not only in a decrease in biodiversity due to toxic effects, but also in enrichment with ILs-degrading bacteria.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Poznan University of Technology, Polish Academy of Sciences, Poznan University Of Life Sciences, Helmholtz Centre for Environmental Research
Authors: Sydow, M. (Ekstern), Owsianiak, M. (Intern), Framski, G. (Ekstern), Woźniak-Karczewsksa, M. (Ekstern), Piotrowska-Cyplik, A. (Ekstern), Ławniczak, Ł. (Ekstern), Szulc, A. (Ekstern), Zgola-Grześkowiak, A. (Ekstern), Heipieper, H. J. (Ekstern), Chrzanowski, L. (Ekstern)
Pages: 157-164
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Ecotoxicology and Environmental Safety
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Ratings:
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.99 SJR 1.205 SNIP 1.484
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Can farmers mitigate environmental impacts through combined production of food, fuel and feed? A consequential life cycle assessment of integrated mixed crop-livestock system with a green biorefinery

This study evaluates environmental impacts of an integrated mixed crop-livestock system with a green biorefinery (GBR). System integration included production of feed crops and green biomasses (Sys-I) to meet the demand of a livestock system (Sys-III) and to process green biomasses in a GBR system (Sys-II). Processing of grass-clover to produce feed protein was considered in Sys-II, particularly to substitute the imported soybean meal. Waste generated from the livestock and GBR systems were considered for the conversion to biomethane (Sys-IV). Digestate produced therefrom was assumed to be recirculated back to the farmers' field (Sys-I). A consequential approach of Life Cycle Assessment (LCA) method was used to evaluate the environmental impacts of a combined production of suckler cow calves (SCC) and Pigs, calculated in terms of their live weight (LW). The functional unit (FU) was a basket of two products "1kgLW-SCC+1kgLW-Pigs", produced at the farm gate. Results obtained per FU were: 19.6kg CO2 eq for carbon footprint; 0.11kg PO4 eq for eutrophication potential; -129MJ eq for non-renewable energy use and -3.9 comparative toxicity units (CTUe) for potential freshwater ecotoxicity. Environmental impact, e.g. greenhouse gas (GHG) emission was primarily due to (i) N2O emission and diesel consumption within Sys-I, (ii) energy input to Sys-II, III and IV, and (iii) methane emission from Sys-III and Sys-IV. Specifically, integrating GBR with the mixed crop-livestock system contributed 4% of the GHG emissions, whilst its...
products credited 7% of the total impact. Synergies among the different sub-systems showed positive environmental gains for the selected main products. The main effects of the system integration were in the reductions of GHG emissions, fossil fuel consumption, eutrophication potential and freshwater ecotoxicity, compared to a conventional mixed crop-livestock system, without the biogas conversion facility and the GBR.

**General information**

State: Published  
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Aarhus University  
Authors: Parajuli, R. (Ekstern), Dalgaard, T. (Ekstern), Birkved, M. (Intern)  
Pages: 127-143  
Publication date: 2018  
Main Research Area: Technical/natural sciences

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Volume: 619-620  
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BFI (2018): BFI-level 2  
Web of Science (2018): Indexed yes  
BFI (2017): BFI-level 2  
Web of Science (2017): Indexed yes  
BFI (2016): BFI-level 2  
Scopus rating (2016): CiteScore 5.09 SJR 1.621 SNIP 1.849  
Web of Science (2016): Indexed yes  
BFI (2015): BFI-level 2  
Scopus rating (2015): SJR 1.674 SNIP 1.642 CiteScore 4.33  
Web of Science (2015): Indexed yes  
BFI (2014): BFI-level 2  
Scopus rating (2014): SJR 1.635 SNIP 1.847 CiteScore 4.2  
Web of Science (2014): Indexed yes  
BFI (2013): BFI-level 2  
Scopus rating (2013): SJR 1.527 SNIP 1.759 CiteScore 3.73  
ISI indexed (2013): ISI indexed yes  
Web of Science (2013): Indexed yes  
BFI (2012): BFI-level 2  
Scopus rating (2012): SJR 1.773 SNIP 1.811 CiteScore 3.7  
ISI indexed (2012): ISI indexed yes  
Web of Science (2012): Indexed yes  
BFI (2011): BFI-level 2  
Scopus rating (2011): SJR 1.798 SNIP 1.681 CiteScore 3.61  
ISI indexed (2011): ISI indexed yes  
Web of Science (2011): Indexed yes  
BFI (2010): BFI-level 2  
Scopus rating (2010): SJR 1.644 SNIP 1.513  
Web of Science (2010): Indexed yes  
BFI (2009): BFI-level 1  
Scopus rating (2009): SJR 1.571 SNIP 1.602  
BFI (2008): BFI-level 2  
Scopus rating (2008): SJR 1.463 SNIP 1.501  
Web of Science (2008): Indexed yes  
Scopus rating (2007): SJR 1.407 SNIP 1.491  
Web of Science (2007): Indexed yes  
Scopus rating (2006): SJR 1.515 SNIP 1.605  
Web of Science (2006): Indexed yes  
Scopus rating (2005): SJR 1.442 SNIP 1.508  
Web of Science (2005): Indexed yes
The ease with which firms can substitute away from energy to other inputs is an important determining factor in the costs of climate change mitigation policies. Climate policy simulation models usually represent this substitutability by using the Constant Elasticity of Substitution (CES) function with parameter values often taken from econometric studies. Hence, the accuracy of the estimated substitution parameters has a strong influence on the validity of the climate policy simulation. In this article, we attempt to replicate the results presented in a widely cited article in this field: Kemfert (1998) ('Estimated substitution elasticities of a nested CES production function approach for Germany', Energy Economics, 20, 249–264). We first use the data and software reported in that article and compare our results with those reported in the original study. We then test the same data and a new, more recent, data set on German industrial data with an improved econometric approach. Despite applying various approaches and modifications, we are not able to replicate the results in Kemfert (1998). We furthermore conclude that the data sets that are typically used to estimate nested CES functions often have too few observations and too little independent variation of the explanatory variables to obtain reliable estimates when using a direct non-linear approach.
Changes and Sentiment: A Longitudinal E-Mail Analysis of a Large Design Project

Changes are part of any project. Although previous research provides methods to deal with changes, understanding of changes in relation to sentiment is still unclear. This is important as people's mood can affect performance and decisions. We implement an approach to quantify "change language" in emails and study its relation to sentiment. We find that sentiment decreases when problems or changes emerge, and increases when changes are implemented successfully. We discuss the implications of our findings for research and project engineering practice, providing avenues for further work.

Circular economy in corporate sustainability strategies: A review of corporate sustainability reports in the fast-moving consumer goods sector

Despite the increasing interest of business and academic research toward Circular Economy, the investigation of its uptake by industry remains limited. To contribute to filling this gap, we perform a systematic review of 46 corporate sustainability reports in the Fast-Moving Consumer Goods sector aiming to explore how companies incorporate the Circular Economy concept in their sustainability agenda. We focus on (i) companies' uptake of Circular Economy, (ii) the relationship between Circular Economy and sustainability and (iii) the Circular Economy practices presented. Our results
show that Circular Economy has started to be integrated into the corporate sustainability agenda. Most reported activities are oriented toward the main product and packaging, focusing on end-of-life management and sourcing strategies, and to a lesser extent on circular product design and business model strategies. Most identified collaborations are with businesses, whereas initiatives addressing consumers are largely missing although considered critical for the transition toward Circular Economy.

General information
State: Accepted/In press
Organisations: Quantitative Sustainability Assessment, Department of Management Engineering
Authors: Stewart, R. M. M. (Intern), Niero, M. (Intern)
Number of pages: 18
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Journal: Business Strategy and the Environment
ISSN (Print): 0964-4733
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.85 SJR 2.228 SNIP 1.905
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.853 SNIP 2.146 CiteScore 4.11
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.768 SNIP 1.826 CiteScore 3.51
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.368 SNIP 1.957 CiteScore 3.78
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.283 SNIP 1.869 CiteScore 3.53
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.154 SNIP 1.472 CiteScore 2.46
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.948 SNIP 1.266
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.854 SNIP 1.571
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.683 SNIP 1.042
Scopus rating (2007): SJR 0.856 SNIP 1.457
Scopus rating (2006): SJR 0.867 SNIP 1.572
Scopus rating (2005): SJR 0.522 SNIP 1.306
Scopus rating (2004): SJR 0.461 SNIP 0.988
Scopus rating (2003): SJR 0.787 SNIP 1.514
Scopus rating (2002): SJR 0.611 SNIP 1.659
Scopus rating (2001): SJR 0.467 SNIP 0.985
Scopus rating (2000): SJR 0.223 SNIP 0.917
Scopus rating (1999): SJR 0.142 SNIP 1.764
Original language: English
CSR report, Food and beverage, Household, Packaging, Sustainable development, Textile
DOIs:
10.1002/bse.2048
Source: FindIt
Source-ID: 2396819071
Climate change adaptation technologies for water: A practitioner's guide to adaptation technologies for increased water sector resilience

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, UN Environment – DHI Centre, Climate Technology Centre and Network
Authors: Bertule, M. (Intern), Appelquist, L. R. (Intern), Spensley, J. (Ekstern), Trærup, S. L. M. (Intern), Naswa, P. (Intern)
Number of pages: 56
Publication date: 2018

Publication information
Publisher: UNEP DTU Partnership
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Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
CC_Adaptation_technologies_for_water_red.pdf
Publication: Research › Anthology – Annual report year: 2018

Clustering-based analysis for residential district heating data
The wide use of smart meters enables collection of a large amount of fine-granular time series, which can be used to improve the understanding of consumption behavior and used for consumption optimization. This paper presents a clustering-based knowledge discovery in databases method to analyze residential heating consumption data and evaluate information included in national building databases. The proposed method uses the K-means algorithm to segment consumption groups based on consumption intensity and representative patterns and ranks the groups according to daily consumption. This paper also examines the correlation between energy intensity and the characteristics of buildings and occupants, load profiles of households, consumption behavior changes over time, and consumption variability. The results show that the majority of the customers can be represented by fairly constant load profiles. Calendar context has an impact not only on the patterns but also on the consumption intensity and user behaviors. The variability studies show that consumption patterns are serially correlated, the customers with high energy consumption have lower variability, and the consumption is more stable over time. These findings will be valuable for district heating utilities and energy planners to optimize their operations, design demand-side management strategies, and develop targeting energy-efficiency programs or policies.

General information
State: Published
Organisations: Department of Civil Engineering, Section for Indoor Climate and Building Physics, Department of Management Engineering, Systems Analysis, Section for Building Energy
Authors: Gianniou, P. (Intern), Liu, X. (Intern), Heller, A. (Intern), Nielsen, P. S. (Intern), Rode, C. (Intern)
Pages: 840-850
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Energy Conversion and Management
Volume: 165
ISSN (Print): 0196-8904
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 6.04 SJR 2.287 SNIP 2.065
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.09 SNIP 2.092 CiteScore 5.24
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Combining or Separating Forward and Reverse Logistics

Purpose – While forward logistics handles and manages the flow of goods downstream in the supply chain from suppliers to customers, reverse logistics (RL) manages the flow of returned goods upstream. A firm can combine reverse logistics with forward logistics, keep the flows separated, or choose a position between the two extremes. The purpose of this paper is to identify the contextual factors that determine the most advantageous position, which the paper refers to as the most advantageous degree of combination.

Design/methodology/approach – The paper first develops a scale ranging from 0% combination to 100% combination (i.e. full separation). Second, using contingency theory the paper identifies the contextual factors described in RL-literature that determine the most advantageous degree of combination. The set of factors is subsequently tested using a case study, which applies a triangulation approach that combines a qualitative and a quantitative method.

Findings – Results show six distinct contextual factors that determine the most advantageous degree of combination.

Examples of factors are technical product complexity, product portfolio variation, and the loss of product value over time.

Practical implications – For practitioners the scale of possible positions and set of contextual factors constitute a decision making framework. Using the framework practitioners can determine the most advantageous position of the scale for their firm.

Originality/value – Much RL-research addresses intra-RL issues while the relationship between forward and reverse logistics is less investigated.

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Practical implications – For practitioners the scale of possible positions and set of contextual factors constitute a decision making framework. Using the framework practitioners can determine the most advantageous position of the scale for their firm.

Originality/value – Much RL-research addresses intra-RL issues while the relationship between forward and reverse logistics is less investigated.
logistics is under-researched. This paper contributes to RL-theory by identifying the contextual factors that determine the most advantageous relationship between forward and reverse logistics, and proposes a novel decision making framework for practitioners.

**General information**

**State:** Published

**Organisations:** Department of Management Engineering, Management Science, Operations Management, Center for Bachelor of Engineering Studies, Afdelingen for Produktionsudvikling, Aalborg University, Toms Group

**Authors:** Herbert-Hansen, Z. N. L. (Intern), Larsen, S. (Intern), Nielsen, A. (Ekstern), Groth, A. (Ekstern), Gregersen, N. G. (Intern), Ghosh, A. (Intern)

**Pages:** 216-236

**Publication date:** 2018

**Main Research Area:** Technical/natural sciences

**Publication information**

**Journal:** International Journal of Logistics Management

**Volume:** 29

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BFI (2018): BFI-level 1

Web of Science (2018): Indexed yes

BFI (2017): BFI-level 1

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BFI (2016): BFI-level 1

Scopus rating (2016): CiteScore 1.79 SJR 0.665 SNIP 0.986

BFI (2015): BFI-level 1

Scopus rating (2015): SJR 0.914 SNIP 1.283 CiteScore 1.52

BFI (2014): BFI-level 1

Scopus rating (2014): SJR 1.029 SNIP 1.001 CiteScore 1.88

BFI (2013): BFI-level 1

Scopus rating (2013): SJR 0.929 SNIP 1.128 CiteScore 1.86

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): SJR 0.706 SNIP 1.012 CiteScore 1.9

ISI indexed (2012): ISI indexed no

BFI (2011): BFI-level 1

Scopus rating (2011): SJR 0.198 SNIP 0.231 CiteScore 0.89

ISI indexed (2011): ISI indexed no

BFI (2010): BFI-level 1

Scopus rating (2010): SJR 0.154 SNIP 0.136

BFI (2009): BFI-level 1

Scopus rating (2009): SJR 0.241 SNIP 0.247

BFI (2008): BFI-level 1

Scopus rating (2008): SJR 0.199 SNIP 0.301

Scopus rating (2007): SJR 0.3 SNIP 0.353

Scopus rating (2006): SJR 0.141 SNIP 0.187

Scopus rating (2005): SJR 0.216 SNIP 0.362

Scopus rating (2004): SJR 0.435 SNIP 0.902

Scopus rating (2003): SJR 0.316 SNIP 0.581

Scopus rating (2002): SJR 0.292 SNIP 0.394

Scopus rating (2001): SJR 0.39 SNIP 0.57

Scopus rating (2000): SJR 0.254 SNIP 0.55

Scopus rating (1999): SJR 0.33 SNIP 0.579

**Original language:** English

**Electronic versions:**

Reverse_Logistics_with_names.pdf
Considering built environment and spatial correlation in modelling pedestrian injury severity
This study looks at mitigating and aggravating factors that are associated with the injury severity of pedestrians when they have crashes with another road user and overcomes existing limitations in the literature by posing attention on the built environment and considering spatial correlation across crashes. Reports for 6539 pedestrian crashes occurred in Denmark between 2006 and 2015 were merged with geographic information system resources containing detailed information about built environment and exposure at the crash locations. A linearised spatial logit model estimated the probability of pedestrians to sustain a severe or fatal injury conditional on the occurrence of a crash with another road user. This study confirms previous findings about older pedestrians and intoxicated pedestrians being the most vulnerable road users, and crashes with heavy vehicles and in roads with higher speed limits being related to the most severe outcomes. This study provides also novel perspectives by showing positive spatial correlation of crashes with the same severity outcome and emphasising the role of the built environment in the proximity of the crash. This study emphasises the need for thinking about traffic calming measures, illumination solutions, road maintenance programs and speed limit reductions. Moreover, this study emphasises the role of the built environment, as shopping areas, residential areas, and walking traffic density are positively related to a reduction in pedestrian injury severity. Often, these areas have in common a larger pedestrian mass that is more likely to make other road users more aware and attentive, while the same does not seem to apply to areas with lower pedestrian density.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Queensland, Technical University of Denmark
Authors: Prato, C. G. (Ekstern), Kaplan, S. (Intern), Patrier, A. (Ekstern), Rasmussen, T. K. (Intern)
Pages: 88-93
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Volume: 19
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ISSN (Print): 1538-9588
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.45 SJR 0.705 SNIP 0.984
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.665 SNIP 1.225 CiteScore 1.33
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.82 SNIP 1.411 CiteScore 1.58
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.783 SNIP 1.126 CiteScore 1.53
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.826 SNIP 1.031 CiteScore 1.31
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.581 SNIP 1.114 CiteScore 1.48
ISI indexed (2011): ISI indexed no
Consistency between subjectively and objectively measured hazard perception skills among young male drivers

Young male drivers have lower hazard perception skills (HPS) than older and more experienced drivers and a tendency to overestimate their skills in hazardous situations. Both factors contribute to an over-representation in traffic accidents. Based on a sample of 63 drivers aged 18-24, this study compares the consistency of HPS measured by objective and subjective measures and the link between these measures is the key contribution of the study. Both visible and hidden hazards are included. Objective measures of HPS include responsiveness and eye movements while driving in a driving simulator. Subjective measures of HPS include self-reports derived based on the Hazard Perception Questionnaire (HPQ), Driving Skill Questionnaire (DSQ), and Brief Sensation Seeking Scale (BSSS). Results show that drivers who respond to the hazards on time, as compared to drivers who do not respond, have higher scores on subjective measures of HPS and higher driving skills in the visible but not in the hidden condition. Eye movement analysis confirms the difference and shows that response in time to hazards indicate higher HPS and young drivers are poor at detecting hidden hazards. Drivers with a response in time locate the hazard faster, have more fixations, but dwell less on the hazard. At the same time, those who do not respond have a later first fixation and fewer but longer fixations on the hazard. High sensation seeking drivers respond to visible hazards on time, suggesting that sensation seeking does not affect HPS negatively when the hazard is visible. To enhance the HPS among young drivers, the results of this study suggest that specific hazard perception training is relevant, especially for hazards that require more advanced HPS.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Abele, L. (Intern), Haustein, S. (Intern), Møller, M. (Intern), Martinussen, L. M. (Intern)
Number of pages: 7
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Main Research Area: Technical/natural sciences

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Journal: Accident Analysis and Prevention
ISSN (Print): 0001-4575
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.24 SJR 1.49 SNIP 1.97
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.206 SNIP 1.808 CiteScore 2.63
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.19 SNIP 2.067 CiteScore 2.79
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.359 SNIP 2.688 CiteScore 3.2
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.3 SNIP 2.238 CiteScore 2.56
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.922 SNIP 2.008 CiteScore 2.61
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.146 SNIP 2.356
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.203 SNIP 1.848
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.276 SNIP 2.228
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.109 SNIP 2.064
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.5 SNIP 2.244
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.008 SNIP 2.387
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.899 SNIP 1.947
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.785 SNIP 1.933
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.614 SNIP 1.443
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.613 SNIP 1.368
Scopus rating (2000): SJR 0.756 SNIP 1.146
Scopus rating (1999): SJR 0.588 SNIP 1.2
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Driving simulator, Eye movements, Hazard perception skills, Young male drivers
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Publication: Research - peer-review › Journal article – Annual report year: 2018


General information
State: Published
Organisations: Department of Energy Conversion and Storage, Quantitative Sustainability Assessment, Department of Management Engineering, Western Macedonia University of Applied Sciences
Authors: Chatzisideris, M. D. (Intern), Laurent, A. (Intern), Christoforidis, G. C. (Ekstern), Krebs, F. C. (Intern)
Pages: 425
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Publication information
Journal: Applied Energy
Volume: 219
ISSN (Print): 0306-2619
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 7.78 SJR 3.058 SNIP 2.573
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.912 SNIP 2.61 CiteScore 6.4
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 3.254 SNIP 3.28 CiteScore 6.93
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 3.164 SNIP 3.377 CiteScore 6.59
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.854 SNIP 3.108 CiteScore 5.69
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.473 SNIP 2.84 CiteScore 5.5
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.516 SNIP 2.25
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.003 SNIP 1.781
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.974 SNIP 1.215
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.179 SNIP 1.709
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.979 SNIP 1.293
Scopus rating (2005): SJR 1.043 SNIP 0.996
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.643 SNIP 0.839
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.778 SNIP 0.797
Scopus rating (2002): SJR 0.577 SNIP 0.775
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.376 SNIP 0.578
Scopus rating (2000): SJR 0.352 SNIP 0.515
Scopus rating (1999): SJR 0.182 SNIP 0.45
Cradle to Cradle and LCA
Cradle to Cradle (C2C) offers a positive vision of a future, where products are radically redesigned to be beneficial to humans and the environment. The idea is not to reduce negative impacts (as in LCA), but to increase positive impacts. This chapter presents the C2C concept and its relationship with the circular economy, the C2C certification and examples of C2C certified or inspired products and systems. This is followed by a comparison of C2C with eco-efficiency and LCA. Because of their important differences, we conclude that care should be taken when combing C2C and LCA, e.g. using LCA to evaluate products inspired by C2C. We then provide an in-depth analysis of the conflicts between C2C and LCA and offer solutions. Finally, we reflect upon how LCA practitioners can learn from C2C in terms of providing a vision of a sustainable future, creating a sense of urgency for change and communicating results in an inspiring way.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Bjørn, A. (Intern), Hauschild, M. Z. (Intern)
Pages: 605-631
Publication date: 2018

Critical Review
Manipulation and mistakes in LCA studies are as old as the tool itself, and so is its critical review. Besides preventing misuse and unsupported claims, critical review may also help identifying mistakes and more justifiable assumptions as well as generally improve the quality of a study. It thus supports the robustness of an LCA and increases trust in its results and conclusions. The focus of this chapter is on understanding what a critical review is, how the international standards define it, what its main elements are, and what reviewer qualifications are required. It is not the objective of this chapter to learn how to conduct a critical review, neither from a reviewer nor from a practitioner perspective. The foundation of this chapter and the basis for any critical review of LCA studies are the International Standards ISO 14040:2006, ISO 14044:2006 and ISO TS 14071:2014.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Rosenbaum, R. K. (Intern), Olsen, S. I. (Intern)
Pages: 335-347
Publication date: 2018
Decarbonising the Finnish Transport Sector by 2050: Electricity or Biofuels?

Finland has set ambitious long-term targets, which aim to reduce greenhouse gas emissions from the transport sector and the whole energy system by 2050. By utilising the energy system model STREAM, which includes the power, heat and transport sectors, this paper develops two alternative scenarios for the transport sector by 2050—one with a high percentage of electric vehicles (EV) and another with a high percentage of biofuels (BIO), and compares the scenario results with a known Carbon-Neutral Scenario (CNS) which is adopted from the Nordic Energy Technology Perspective (IEA in Nordic energy technology perspective—pathways to a carbon-neutral energy future, 2013a). The socio-economic value of the total system cost is computed and the system integration of the transport sector with the electricity and heating sectors is simulated with an hourly time resolution. This study finds that a Finnish transport sector with a high share of EV by 2050 leads to the lowest total annual system cost of the scenarios and yields a reduction by 2.3% compared to CNS. While the transport configuration in the BIO scenario achieves the highest total annual system cost which is 0.4% higher than CNS. The robustness of the results is tested through a sensitivity analysis which shows that the costs (investment and maintenance) of biodiesel cars and EV are the most sensitive parameters in the comparative analysis of the scenarios.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Skytte, K. (Intern), Bramstoft Pedersen, R. (Intern)
Pages: 3-22
Publication date: 2018

Decarbonization of maritime transport: to be or not to be?

International shipping is at a crossroads as regards decarbonization. The Paris climate change agreement in 2015 (COP21) was hailed by many as a most significant achievement. Others were less enthusiastic, and more recently American President Trump decided to take the U.S. out of the agreement. Four years earlier, the International Maritime Organization (IMO) had adopted the most sweeping piece of regulation pertaining to maritime greenhouse gas (GHG) reduction, in the name of the Energy Efficiency Design Index (EEDI). In addition, one year after COP21, the IMO adopted a mandatory data collection system for fuel consumption of ships and agreed on an initial strategy and roadmap on the reduction of GHG emissions from ships. This paper takes a critical look at the above and other recent developments and focuses on the challenges faced by the industry if a path to significant CO2 reductions is to be successful. Difficulties and opportunities are identified, and the paper conjectures that the main obstacles are neither technical nor economic, but political.

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State: Accepted/In press
Organisations: Department of Management Engineering, Management Science, Transport DTU, Operations Management
Authors: Psaraftis, H. N. (Intern)
Number of pages: 19
Decision support for large-scale remediation strategies by fused urban metabolism and life cycle assessment

Purpose: This paper seeks to identify the most environmentally friendly way of conducting a refurbishment of Broendby Strand, with focus on PCB remediation. The actual identification is conducted by comparing four remediation techniques using urban metabolism fused with life cycle assessment (UM-LCA) in combination with information relating to cost and efficiency of the compared techniques. The methodological goal of our paper is to test UM-LCA as a decision support tool and discuss application of the method in relation to large refurbishment projects. Methods: To assess the environmental performance of PCB-remediation techniques, the UM-LCA method was applied. By combining UM and LCA methodologies, the total environmental impact potentials of the remediation techniques were calculated. To build an inventory for each technique, we contacted and interviewed experts and studied existing literature, cases, and projects in order to compile information on practical details of the techniques. To process the collected inventory data, we used the simplified product system modeling software Quantis Suite 2.0 (QS2.0). In order to validate the results from the simplified...
software, we carried out the exact same analysis using a more complex tool—OpenLCA 1.5. Based on the assessment results, we compared the remediation techniques and identified the techniques with the smallest and largest environmental impact potentials. Results and discussion: The results obtained are presented, and the technique with the smallest impact identified. A comparison between the two software tools applied is made, and differences between the two are discussed in detail. Further discussed is how possible inventory errors affect the results and if any assumptions should be considered as critical for the final results. Furthermore, are the remediation efficiencies of each technique and the cost of each method considered and compared. Finally, UM-LCA’s ability to work as a tool for decision support is discussed and possible ways of implementing the method in sustainable decision-making is considered. Conclusions: In this study, it is found that the most environmental friendly PCB-remediation technique is thermal desorption, whereas the technique with the largest environmental impact potential is sand blasting, due to the environmental impacts induced in relation to disposal of the building waste. It is concluded that the UM-LCA method can be applied as a tool for decision support, and if economic aspects are incorporated, the UM-LCA approach could be an essential approach for designing sustainable buildings.

General information
State: Accepted/In press
Organisations: Department of Civil Engineering, Section for Building Energy, Department of Management Engineering, Quantitative Sustainability Assessment, Technical University of Denmark
Authors: Ohms, P. (Ekstern), Andersen, C. (Ekstern), Landgren, M. (Intern), Birkved, M. (Intern)
Number of pages: 15
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: International Journal of Life Cycle Assessment
ISSN (Print): 0948-3349
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.43 SJR 1.328 SNIP 1.423
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.504 SNIP 1.554 CiteScore 3.49
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.736 SNIP 1.738 CiteScore 3.65
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.666 SNIP 1.979 CiteScore 3.35
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.515 SNIP 1.701 CiteScore 2.89
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.581 SNIP 1.716 CiteScore 2.82
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.447 SNIP 1.861
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.201 SNIP 1.592
Web of Science (2009): Indexed yes
Deep Learning from Crowds

Over the last few years, deep learning has revolutionized the field of machine learning by dramatically improving the state-of-the-art in various domains. However, as the size of supervised artificial neural networks grows, typically so does the need for larger labeled datasets. Recently, crowdsourcing has established itself as an efficient and cost-effective solution for labeling large sets of data in a scalable manner, but it often requires aggregating labels from multiple noisy contributors with different levels of expertise. In this paper, we address the problem of learning deep neural networks from crowds. We begin by describing an EM algorithm for jointly learning the parameters of the network and the reliabilities of the annotators. Then, a novel general-purpose crowd layer is proposed, which allows us to train deep neural networks end-to-end, directly from the noisy labels of multiple annotators, using only backpropagation. We empirically show that the proposed approach is able to internally capture the reliability and biases of different annotators and achieve new state-of-the-art results for various crowdsourced datasets across different settings, namely classification, regression and sequence labeling.

General information

State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling
Authors: Rodrigues, F. (Intern), Pereira, F. C. (Intern)
Number of pages: 8
Publication date: 2018
Main Research Area: Technical/natural sciences
Source: PublicationPreSubmission
Source-ID: 145122896
Publication: Research - peer-review › Paper – Annual report year: 2018

Delivering market-based access to clean cooking fuel for displaced populations the Kigoma region, Tanzania: a business plan

Two phases of a pilot scheme to supply LPG in the Nyarugusu refugee camp in 2017, and follow up research conducted by UNEP DTU Partnership, reveal a strong desire and willingness to pay (WTP) among refugee households for LPG as an alternative to traditional biomass for cooking. This reflects the relatively high financial and non-financial costs of woodfuel and charcoal use in the camp, which in turn is a function of the size and profile of the camp. Where there is a willingness to pay (WTP) for any given good or service, but where the market is constrained in meeting this demand (such as in a refugee camp), there is a need for an intervention to create a market. This market creation plan is the outcome of various discussions with key stakeholders which took place between November 2017 and January 2018, the full list is presented in section 7. It intends to give a clear picture of the opportunities and challenges, along with the different options
available to developing a market for LPG in the Kigoma region. The aims and intended outcomes of the LPG market creation programme support the Tanzanian government’s ambition to scale up the use of LPG across the nation. In the context of the refugee camps in Kigoma, it also addresses the GoT’s aim to help reduce deforestation and conflict risk with the local communities surrounding the camps. It is also aligned with UNHCR’s protection remit and with the emerging global framework of actions to supply clean, sustainable and affordable energy for displaced people, as part of global efforts to deliver on SDG7. Following comments and feedback provided by the UNHCR, a shorter concept note will be developed, targeted at funding agencies and donors.

**General information**

State: Published  
Organisations: Department of Management Engineering, UNEP DTU Partnership  
Authors: Rivoal, M. (Ekstern), Haselip, J. A. (Intern)  
Number of pages: 36  
Publication date: 2018

**Publication information**

Publisher: UNEP DTU Partnership  
Original language: English  
Main Research Area: Technical/natural sciences  
Electronic versions: LPG_market_creation_plan_for_refugees_in_Tanzania.pdf  
Source: PublicationPreSubmission  
Source-ID: 144771970  
Publication: Research › Report – Annual report year: 2018

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**Design for Health: Towards Collaborative Care**

The design of novel healthcare delivery models better suited to address the burden of chronic diseases requires a thorough understanding of the foundational concepts of patient and healthcare provider collaboration. Reviewing the literature, we propose a taxonomy towards collaborative care: a generic term characterising healthcare delivery models that focus on the importance of patient-provider interactions, support safe patient participation in their own care, and redefine the balance of decision-power and accountability between patient and provider in health and care management.

**General information**

State: Accepted/In press  
Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology, ATAH Aps, University of Copenhagen  
Authors: Valentin-Hjorth, J. F. (Intern), Patou, F. (Intern), Syhler, N. (Ekstern), Vall-Lamora, M. H. D. (Ekstern), Maier, A. (Intern)  
Publication date: 2018  
Main Research Area: Technical/natural sciences  
Source: PublicationPreSubmission  
Source-ID: 145301114  
Publication: Research › Conference abstract for conference – Annual report year: 2018

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**Design process robustness: A bi-partite network analysis reveals the central importance of people**

Design processes require the joint effort of many people to collaborate and work on multiple activities. Effective techniques to analyse and model design processes are important for understanding organisational dynamics, for improving collaboration, and for planning robust design processes, reducing the risk of rework and delays. Although there has been much progress in modelling and understanding design processes, little is known about the interplay between people and the activities they perform and its influence on design process robustness. To analyse this interplay, we model a large-scale design process of a biomass power plant with people and activities as a bipartite network. Observing that some people act as bridges between activities organised to form nearly independent modules, in order to evaluate process fragility, we simulate random failures and targeted attacks to people and activities. We find that our process is more vulnerable to attacks to people rather than activities. These findings show how the allocation of people to activities can obscure an inherent fragility, making the process highly sensitive and dependent on specific people. More generally, we show that the behaviour of robustness is determined by the degree distributions, the heterogeneity of which can be leveraged to improve robustness and resilience to cascading failures. Overall, we show that it is important to carefully plan the assignment of people to activities.

**General information**

State: Published  
Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology, Department of Applied Mathematics and Computer Science, Cognitive Systems  
Authors: Piccolo, S. (Intern), Jørgensen, S. L. (Intern), Maier, A. (Intern)
Developing theory-driven design research

Design research is increasingly weak in comparison with other fields; without action to increase scientific, theoretical, and methodological rigour there is a real possibility of the field being superseded and becoming obsolete through lack of impact. The aim of this paper is to show how design research could become more rigorous, relevant and have greater impact. I conduct a two-part review that combines systematic and critical components. Part one characterises the major scientific challenges facing design research, and part two examines how such challenges have been addressed in related fields. I identify key learning indicating future directions for theory-driven design research. I conclude by providing some concrete recommendations for the field of design research and individual design researchers.
Development of a life-cycle impact assessment methodology linked to the Planetary Boundaries framework

To enable quantifying environmental performance of products and technologies in relation to Planetary Boundaries, there is a need for life-cycle impact assessment (LCIA) methods which allow for expressing indicators of environmental impact in metrics corresponding to those of the control variables in the Planetary Boundaries framework. In this study, we present such a methodology, referred to as PB-LCIA. Characterization factors for direct use in the LCIA phase of a life cycle assessment, or other life-cycle based assessment, were developed for a total of 85 elementary flows recognized as dominant contributors to transgressing specific Planetary Boundaries. Exception was made for "biosphere integrity" and "introduction of novel entities" where a Planetary Boundary is yet to be defined for the latter and characterization models are considered immature for the former. The PB-LCIA can be used to quantify the share of the "safe operating space" that human activities occupy, as was illustrated by calculating indicator scores for about 10,600 products, technologies and services exemplifying several sectors, including materials, energy, transport, and processing. The PB-LCIA can be used by companies interested in gauging their activities against the Planetary Boundaries to support decisions that help to reduce the risk of human activities moving the Earth System out of the Holocene state.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Danish Museum of Natural History
Authors: Ryberg, M. W. (Intern), Owsianiak, M. (Intern), Richardson, K. (Ekstern), Hauschild, M. Z. (Intern)
Pages: 250-262
Publication date: 2018
Main Research Area: Technical/natural sciences
This article describes how employment sub-centres can be identified applying geo-spatial modelling techniques in the context of metropolitan areas in India, and how the development of these employment centres can be linked to the levels of accessibility to labour, access to transport infrastructure as well as land use mix and land use diversity. For the city of Ahmedabad, employment sub-centres are identified for the year 2010, while the progression of employment in retail, commercial and industrial sectors in each of these centres is studied for the period from 1980 to 2010. Definite the signs of sprawl-type development and polarization reversal are observed, including the emergence of new employment sub-centres across the urban area, and the rapid growth of centres further away from the central business district. Retail and commercial sectors have grown exponentially, whereas industrial and manufacturing sector's growth is stagnant. This development is mixed and heterogeneous, with the growth of the retail and the commercial sectors found to have a significant and positive relation with access to labour and transport infrastructure. These identified patterns of development provide important information to urban planners enabling them to make informed decision, for example, in locating future
employment activities, identifying future transit-oriented development nodes, etc.

**General information**
State: Published
Organisations: Department of Management Engineering, Transport DTU, UNEP DTU Partnership, University of Twente, University of Cape Town
Authors: Munshi, T. (Intern), Brussel, M. (Ekstern), Zuidgeest, M. (Ekstern), Van Maarseveen, M. (Ekstern)
Pages: 37-51
Publication date: 2018
Main Research Area: Technical/natural sciences

**Publication information**
Journal: Environment and Urbanization Asia
Volume: 9
Issue number: 1
ISSN (Print): 0976-3546
Ratings:
Scopus rating (2016): CiteScore 0.31 SNIP 0.436 SJR 0.148
Scopus rating (2015): CiteScore 0.23 SNIP 0.123 SJR 0.113
Scopus rating (2014): CiteScore 0.08 SNIP 0.064 SJR 0.106
Scopus rating (2013): SNIP 0.014 SJR 0.123
Scopus rating (2012): SNIP 0 SJR 0.122
Scopus rating (2011): SNIP 0 SJR 0.102
Original language: English
DOIs:
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Source: FindIt
Source-ID: 2395784355
Publication: Research - peer-review › Journal article – Annual report year: 2018

**District heating and cooling systems innovation challenge**

**General information**
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Department of Civil Engineering, Section for Building Energy, Department of Mechanical Engineering, Thermal Energy, Halmstad University
Authors: Münster, M. (Intern), Werner, S. (Ekstern), Svendsen, S. (Intern), Furbo, S. (Intern), Elmegaard, B. (Intern)
Pages: 89-97
Publication date: 2018

**Host publication information**
Title of host publication: Accelerating the clean energy revolution - perspectives on innovation challenges : DTU International Energy Report 2018
Publisher: Technical University of Denmark (DTU)
ISBN (Electronic): 978-87-93458-57-4
Chapter: 11
Main Research Area: Technical/natural sciences
Electronic versions:
Publication: Research - peer-review › Report chapter – Annual report year: 2018

**Disentangling Distance and Country Effects on the Value of Conservation across National Borders**

**Highlights:**
We study trans-national valuation of conservation outcomes in two neighbouring countries Sweden and Denmark.

The experimental design allow us to separate country and distance effects on values.

Respondents prefer conservation in their own country over neighbouring countries.

Value decreases with distance from respondents' home location.

The results are important for the design of trans-national conservation policies.
The origins of Operational Research are well known. OR developed – in particular in the UK - in the early 1940s as an area in which science was applied and new research inspired by real-world challenges, primarily in military analysis and in industrial production. As OR developed, a community of academic OR scholars became established alongside OR practitioners and this has led quite naturally to the situation that, over time, much of the OR academic literature is inspired by theoretical development rather than by immediate application.
Effects of new bus and rail rapid transit systems – an international review

Cities worldwide are implementing modern transit systems to improve mobility in the increasingly congested metropolitan areas. Despite much research on the effects of such systems, a comparison of effects across transit modes and countries has not been studied comprehensively. This paper fills this gap in the literature by reviewing and comparing the effects obtained by 86 transit systems around the world, including Bus Rapid Transit (BRT), Light Rail Transit (LRT), metro and heavy rail transit systems. The analysis is twofold by analysing (i) the direct operational effects related to travel time, ridership and modal shifts, and (ii) the indirect strategic effects in terms of effects on property values and urban development. The review confirms the existing literature suggesting that BRT can attract many passengers if travel time reductions are significantly high. This leads to attractive areas surrounding the transit line with increasing property values. Such effects are traditionally associated with attractive rail-based public transport systems. However, a statistical comparison of 41 systems did not show significant deviations between effects on property values resulting from BRT, LRT and metro systems, respectively. Hence, this paper indicates that large strategic effects can be obtained by implementing BRT systems at a much lower cost.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling
Authors: Ingvardson, J. B. (Intern), Nielsen, O. A. (Intern)
Pages: 96-116
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Transport Reviews
Volume: 38
Issue number: 1
ISSN (Print): 0144-1647
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
Electric bus fleet size and mix problem with optimization of charging infrastructure

Battery electric buses are seen as a well-suited technology for the electrification of road-based public transport. However, the transition process from conventional diesel to electric buses faces major hurdles caused by range limitations and required charging times of battery buses. This work addresses these constraints and provides a methodology for the cost-optimized planning of depot charging battery bus fleets and their corresponding charging infrastructure. The defined problem covers the scheduling of battery buses, the fleet composition, and the optimization of charging infrastructure in a joint process. Vehicle schedule adjustments are monetized and evaluated together with the investment and operational costs of the bus system. The resulting total cost of ownership enables a comparison of technical alternatives on a system level, which makes this approach especially promising for feasibility studies comprising a wide range of technical concepts. Two scenarios of European cities are analyzed and discussed in a case study, revealing that the cost structure is influenced significantly by the considered bus type and its technical specifications. For example, the total energy consumption of the considered lightweight bus is up to 32% lower than the total consumption of the high range bus, although the deadheading mileage increases. However, the total costs of ownership for operating both bus types are relatively close, due to the increased fleet size and driver expenses required for the lightweight bus system. The case
study furthermore reveals that a mixed fleet of different bus types could be advantageous depending on the operational characteristics of the bus route.

**General information**

State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Transport DTU, Operations Management, RWTH Aachen University
Authors: Rogge, M. (Ekstern), van der Hurk, E. (Intern), Larsen, A. (Intern), Sauer, D. U. (Ekstern)
Pages: 282-295
Publication date: 2018
Main Research Area: Technical/natural sciences

**Publication information**

Journal: Applied Energy
Volume: 211
ISSN (Print): 0306-2619
Ratings:
- BFI (2018): BFI-level 2
- Web of Science (2018): Indexed yes
- BFI (2017): BFI-level 2
- Web of Science (2017): Indexed yes
- BFI (2016): BFI-level 2
- Scopus rating (2016): CiteScore 7.78 SJR 3.058 SNIP 2.573
- Web of Science (2016): Indexed yes
- BFI (2015): BFI-level 2
- Scopus rating (2015): SJR 2.912 SNIP 2.61 CiteScore 6.4
- Web of Science (2015): Indexed yes
- BFI (2014): BFI-level 2
- Scopus rating (2014): SJR 3.254 SNIP 3.28 CiteScore 6.93
- Web of Science (2014): Indexed yes
- BFI (2013): BFI-level 1
- Scopus rating (2013): SJR 3.164 SNIP 3.377 CiteScore 6.59
- ISI indexed (2013): ISI indexed yes
- Web of Science (2013): Indexed yes
- BFI (2012): BFI-level 1
- Scopus rating (2012): SJR 2.854 SNIP 3.108 CiteScore 5.69
- ISI indexed (2012): ISI indexed yes
- Web of Science (2012): Indexed yes
- BFI (2011): BFI-level 1
- Scopus rating (2011): SJR 2.473 SNIP 2.84 CiteScore 5.5
- ISI indexed (2011): ISI indexed yes
- Web of Science (2011): Indexed yes
- BFI (2010): BFI-level 1
- Scopus rating (2010): SJR 1.516 SNIP 2.25
- Web of Science (2010): Indexed yes
- BFI (2009): BFI-level 1
- Scopus rating (2009): SJR 1.003 SNIP 1.781
- Web of Science (2009): Indexed yes
- BFI (2008): BFI-level 2
- Scopus rating (2008): SJR 0.974 SNIP 1.215
- Web of Science (2008): Indexed yes
- Scopus rating (2007): SJR 1.179 SNIP 1.709
- Web of Science (2007): Indexed yes
- Scopus rating (2006): SJR 0.979 SNIP 1.293
- Scopus rating (2005): SJR 1.043 SNIP 0.996
- Web of Science (2005): Indexed yes
Environmental Labels and Declarations

Based on the terminology and structure developed by the International Organization for Standardization, a description is given on the types of ecotags that build on life cycle assessments. Focus is on Type I labels that point out products and services with an overall environmental preferability within a specific product category. Type I labels include official labels set up by government and international institutions. Examples are given on operation of labelling schemes, development and focus area for criteria that must be met to obtain a label, effects on environment and legislation of labelling, the use of ecotags in marketing, and the way ecotags help build a market for "greener products". Type III labels—Environmental Product Declarations—are also briefly described with indicative examples from the building sector, a declaration for office furniture, and an introduction is given to the European Commission’s programme for product—and organisational environmental footprints.

General information
State: Published
Organisations: Department of Management Engineering, Danish Standards Foundation
Authors: Frydendal, J. (Intern), Hansen, L. (Ekstern), Bonou, A. (Intern)
Pages: 577-604
Publication date: 2018
Host publication information
Title of host publication: Life Cycle Assessment: Theory and Practice
Publisher: Springer
Chapter: 24
Main Research Area: Technical/natural sciences
DOIs: 10.1007/978-3-319-56475-3_24
Source: Findit
Source-ID: 2373522920
Publication: Research - peer-review › Book chapter – Annual report year: 2017

Estrategia de Desarrollo Bajo en Carbono (EDBC) para el sector de Ganadería bovina de Nicaragua

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, Tropical Agricultural Centre for Research and Higher Education (CATIE) (CR), Universidad del Tolima
Number of pages: 90
Publication date: 2018
Publication information
Original language: Spanish
Main Research Area: Technical/natural sciences
Electronic versions: Nicaragua_Livestock_Spanish_2.pdf
Publication: Research › Report – Annual report year: 2018

Evaluation of land-use and transport network effects on cyclists’ route choices in the Copenhagen Region in value-of-distance space
Growing interest in sustainable transportation systems has driven decision-makers toward policies and investments aimed at promoting cycling, but little to no effort has been made toward incorporating bicycle transport in transport planning models. This study contributes toward this direction by estimating a bicycle route choice model in value-of-distance space from a large sample of 3384 cycling trips that were traced with GPS devices in the Copenhagen Region. The novelty of this study lies in (i) observing cyclists’ behavior in a cycling-oriented country, (ii) exploiting rich data about the cycling environment, (iii) estimating the model in value-of-distance rather than preference space, and (iv) not focusing only on preferences for traditional variables (e.g., distance, turns, hilliness, intersections, motorized road characteristics), but also on perceptions and preferences for bicycle facilities (e.g., bicycle lanes, bicycle paths, bicycle traces) and land-use designations (e.g., residential, industrial, sports, scenic areas). The findings from the model show that: (i) cyclists exhibit heterogeneous preferences for avoiding right and left turns, cycling the wrong way, using roundabouts and bridges, and cycling alongside residential and scenic areas; (ii) cyclists dislike cycling on unpaved and hilly surfaces and alongside larger roads; (iii) cyclists have clear perceptions about different types of bicycle facilities, with a preference for bicycle lanes and segregated paths; (iv) cyclists have clear perceptions about land-use designations, with a preference for cycling alongside sports and scenic areas; (v) time-of-day and air temperature contribute to the perceptions of cyclists and their preferences for bicycle facilities and land-use designations.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Queensland
Authors: Prato, C. G. (Ekstern), Halldórsdóttir, K. (Intern), Nielsen, O. A. (Intern)
Number of pages: 12
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: International Journal of Sustainable Transportation
ISSN (Print): 1556-8318
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 1.91 SJR 0.957 SNIP 1.419
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.341 SNIP 2.269 CiteScore 2.94
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.192 SNIP 1.782 CiteScore 2.45
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.509 SNIP 1.5 CiteScore 1.43
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.002 SNIP 1.265 CiteScore 1.49
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.558 SNIP 0.445 CiteScore 0.98
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.288 SNIP 0.495
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.101 SNIP 0
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.101 SNIP 0
Original language: English
Bicycle infrastructure, Cycling, Doubly stochastic generation function, Generalised mixed path size logit, Land-use, Route choice
DOIs:
10.1080/15568318.2018.1437236
Executive summary

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Copenhagen Center for Health Technology
Authors: Jørgensen, B. H. (Intern)
Pages: 13-19
Publication date: 2018

Exploring the implementation of a circular economy strategy: the case of a closed-loop supply of aluminum beverage cans
The circular economy concept provides a key opportunity to address the challenge of resource scarcity for both policy makers and industries. Companies are urged to play their part and integrate circular economy in their business. However, little has been said about how implementation should occur and the consequences for the industry. This paper explores possibilities for the business implementation of a beverage producer’s circular economy strategy, which consists in setting up a closed-loop supply of aluminum beverage cans. For this purpose, we develop a business model-inspired framework derived from literature on business models and circular economy, which we use to analyze the current business ecosystem for aluminum beverage cans in the UK.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Technology and Innovation Management
Authors: Stewart, R. M. M. (Intern), Niero, M. (Intern), Murdock, K. (Intern), Olsen, S. I. (Intern)
Pages: 810-815
Publication date: 2018

Exploring Uncertainty Perception as a Driver of Design Activity
This paper investigates uncertainty perception as a general driver of individual design activity. An observation based protocol study is used to explore the interaction between uncertainty perception and three core actions connected in design activity: information action, knowledge sharing action, and representation action. We bring together prior works on uncertainty perception in the design and management literatures to derive three contributions. First, we describe how uncertainty perception is associated with activity progression, linking all three core actions. Second, we identify characteristic patterns of interaction between uncertainty perception and activity. Third, we decompose uncertainty perception to further explain its role in driving design activity. This extends prior research on design activity, and supports a number of theoretical and empirical implications.

General information
State: Published
Organisations: Department of Management Engineering, System Analysis, Copenhagen Center for Health Technology
Authors: Jørgensen, B. H. (Intern)
Pages: 13-19
Publication date: 2018

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Title of host publication: Accelerating the clean energy revolution - perspectives on innovation challenges: DTU International Energy Report 2018
Publisher: Technical University of Denmark (DTU)
ISBN (Electronic): 978-87-93458-57-4
Chapter: 2
Main Research Area: Technical/natural sciences

Host publication information
Title of host publication: 25th CIRP Life Cycle Engineering (LCE) Conference
Main Research Area: Technical/natural sciences
Conference: 25th CIRP Life Cycle Engineering (LCE) Conference, Copenhagen, Denmark, 30/04/2018 - 30/04/2018
Electronic versions: 1_s2.0_S2212827117307734_main.pdf
DOIs: 10.1016/j.procir.2017.11.006
Source: PublicationPreSubmission
Source-ID: 146553079
Publication: Research - peer-review › Article in proceedings – Annual report year: 2018

Exploring Uncertainty Perception as a Driver of Design Activity
This paper investigates uncertainty perception as a general driver of individual design activity. An observation based protocol study is used to explore the interaction between uncertainty perception and three core actions connected in design activity: information action, knowledge sharing action, and representation action. We bring together prior works on uncertainty perception in the design and management literatures to derive three contributions. First, we describe how uncertainty perception is associated with activity progression, linking all three core actions. Second, we identify characteristic patterns of interaction between uncertainty perception and activity. Third, we decompose uncertainty perception to further explain its role in driving design activity. This extends prior research on design activity, and supports a number of theoretical and empirical implications.
Factors of electric vehicle adoption: A comparison of conventional and electric car users based on an extended theory of planned behavior

Increasing the share of battery electric vehicles (BEV) in the total car fleet is regarded as a promising way to reduce local car emissions. Based on online surveys in Denmark and Sweden, this study compares BEV users' (n = 673) and conventional vehicle (CV) users' (n = 1794) socio-demographic profiles, attitudinal profiles, and mobility patterns. In line with previous research, BEV users are typically male, highly educated, have high incomes, and often more than one car in their household. Additionally, BEV users perceive less functional barriers toward BEV use and have more positive attitudes and norms than CV users. The different profiles of these user groups suggest a separate analysis of potential factors of BEV adoption in both groups. In regression analyses, CV and BEV users’ intention to use/purchase a BEV is modeled based on factors of the Theory of Planned Behavior extended by personal norm, perceived mobility necessities, and BEV experience. For CV users, symbolic attitudes related to BEVs are the most important factor of intention, while perceived functional barriers in terms of driving range are most relevant for BEV users’ intention. How BEV users cope with trips of longer distance seems of particular relevance. In multiple car households, we found the percentage of actual BEV usage related to the type of other cars in the household, perceived functional barriers of BEVs as well as (successful) behavioral adaption to longer trips by BEVs. Based on the results, we discuss ways to increase BEV adoption for current users and non-users.

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State: Accepted/In press
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU, Transport Modelling
Authors: Haustein, S. (Intern), Jensen, A. F. (Intern)
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Scopus rating (2014): SJR 2.192 SNIP 1.782 CiteScore 2.45
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BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.509 SNIP 1.5 CiteScore 1.43
ISI indexed (2013): ISI indexed yes
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Scopus rating (2012): SJR 1.002 SNIP 1.265 CiteScore 1.49
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.558 SNIP 0.445 CiteScore 0.98
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Flexible ship loading problem with transfer vehicle assignment and scheduling

This paper presents the flexible containership loading problem for seaport container terminals. The integrated management of loading operations, planning of the transport vehicles to use and their scheduling is what we define as the Flexible Ship Loading Problem (FSLP). The flexibility comes from a cooperative agreement between the terminal operator and the liner shipping company, specifying that the terminal has the right to decide which specific container to load for each slot obeying the class-based stowage plan received from the liner. We formulate a mathematical model for the problem. Then we present various modelling enhancements and a mathematical model to obtain strong lower bounds. We also propose a heuristic algorithm to solve the problem. It is shown that enhancements improve the performance of formulation significantly, and the heuristic efficiently generates high-quality solutions. Results also point out that substantial cost savings can be achieved by integrating the ship loading operations.

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State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Transport DTU
Authors: Iris, Ç. (Intern), Christensen, J. (Intern), Pacino, D. (Intern), Repke, S. (Intern)
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Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
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Scopus rating (2013): SJR 3.203 SNIP 3.487 CiteScore 4.64
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Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.804 SNIP 3.552 CiteScore 3.82
Flood management in urban Senegal: an actor-oriented perspective on national and transnational adaptation interventions

In Senegal, considerable development assistance has been allocated to addressing the problem of repeated flooding in urban areas, involving changing thematic objectives, from short-term disaster relief to wide-ranging sanitation and drainage programmes. In spite of these numerous flood management interventions, the number of flood victims in Senegal's urban centres has increased steadily since 1999. This article contributes empirically and conceptually to recent studies highlighting poor national disaster risk-management frameworks in West Africa, by investigating how floods have been managed in Senegal and why this management has not led to the results expected by the population. The article finds that the configuration of flood management policies and programmes in urban Senegal points towards three key intertwined issues which have influenced the limited achievements of flood management in urban areas. These include, but are not restricted to, the political and personal appropriation of flood management-related processes, the reinforcement of the dichotomy between central government and municipalities, and a fragmented institutional framework with overlapping institutions.

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State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Schaer, C. (Intern), Thiam, M. D. (Ekstern), Nygaard, I. (Intern)
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Framework conditions for Nordic district heating - Similarities and differences, and why Norway sticks out

The district heating (DH) sectors differ considerably among the Nordic countries: DH is an important contributor to heat supply in Denmark, Finland and Sweden, but in Norway it plays only a minor role. In this study, we compare historical, economic, jurisdictional, political and geographical framework conditions for DH and assess their impacts on the development of DH in the Nordic region. DH is subject to national and municipal regulations, with tax and subsidy schemes that are complex and vary between the countries. The total fuel prices induce differences in fuel distribution. Electricity is competitive, both in DH and individual heating in Norway. This study further suggests, by comparing the impacts and implications of differences in cost components in a model plant, that differences in profitability is currently small between the Nordic countries. However, historical and geographical factors, such as local commitment and differences in infrastructure, constitute the major difference in the penetration of DH. Adaptability, in terms of fuel flexibility, is important for the industry’s survivability and electricity prices are crucial for the development of DH. Energy efficiency measures and competition from residential heat pumps are the industry’s largest challenges.

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Web of Science (2016): Indexed yes
Through the insight and visions of Danish lighting experts, this manuscript investigates relationships between future lighting technologies and practices and the expected impacts on energy and lighting consumption. The light-emitting diode
(LED) will be the dominant technology of the future smart light systems. Though, energy efficiency is expected to improve, new market players will appear and new lighting opportunities will be exploited that, in turn, will increase the demand for light. A rebound effect is expected. The overall impact on the future consumption of energy is uncertain, so we conclude that political guidance is needed if society wants to assure the reduction of energy consumption through widespread diffusion of smart LED lights.

General information
State: Published
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Scopus rating (2012): SJR 1.507 SNIP 2.009 CiteScore 2.92
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BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.094 SNIP 1.582 CiteScore 2.37
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BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.018 SNIP 1.47
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.838 SNIP 1.589
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.848 SNIP 1.502
Scopus rating (2007): SJR 0.628 SNIP 1.377
Scopus rating (2006): SJR 0.568 SNIP 1.171
Scopus rating (2005): SJR 0.527 SNIP 1.614
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.343 SNIP 0.897
Scopus rating (2003): SJR 0.409 SNIP 0.97
Scopus rating (2002): SJR 0.431 SNIP 1.007
Web of Science (2002): Indexed yes
Future-Oriented LCA

LCA is often applied for decision-making that concerns actions reaching near or far into the future. However, traditional life cycle assessment methodology must be adjusted for the prospective and change-oriented purposes, but no standardised way of doing this has emerged yet. In this chapter some challenges are described and some learnings are derived. Many of the future-oriented LCAs published so far perform relatively short-term prediction of simple comparisons. But for more long-term time horizons foresight methods can be of help. Scenarios established by qualified experts about future technological and economic developments are indispensable in future technology assessments. The uncertainties in future-oriented LCAs are to a large extent qualitative and it is important to emphasise that LCA of future technologies will provide a set of answers and not 'the' answer.

General information

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Technology and Innovation Management, Transport DTU
Authors: Olsen, S. I. (Intern), Borup, M. (Intern), Andersen, P. D. (Intern)
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Getting on the ground: Exploring the determinants of utility-scale solar PV in Rwanda

Solar PV is gaining ground in low and middle-income countries, especially in sub-Saharan Africa where a change from donor to more market-driven investments has been observed. This article contributes to energy transition research in low-income countries, taking Rwanda as a case study and focusing on the factors that determined the implementation of what was the largest on-grid solar project, upon completion in 2014. The multi-level perspective (MLP) is used to structure our analysis of the various socio-technical levels, and their interaction, to better understand the conditions that are enabling this transition. Our analysis reveals the central importance of bureaucratic and regulatory support for investment in low-carbon energy technologies, within a political economy influenced by processes of neo-liberalisation, while creating significant space for private contract negotiation. In particular, the provision of legal and financial guarantees was crucial to reduce risk for foreign capital investment, revealing contradictory forces that both promoted market rule, while limiting private capital’s exposure to competitive pressures. We also focus our analysis on the aspect of control and driving forces, in particular the role of development partners and private sector project champions.

General information

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Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Rodríguez Manotas, J. (Intern), Bhamidipati, P. L. (Intern), Haselip, J. A. (Intern)
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Publication information
Global guidance on environmental life cycle impact assessment indicators: impacts of climate change, fine particulate matter formation, water consumption and land use

Purpose: Guidance is needed on best-suited indicators to quantify and monitor the man-made impacts on human health, biodiversity and resources. Therefore, the UNEP-SETAC Life Cycle Initiative initiated a global consensus process to agree on an updated overall life cycle impact assessment (LCIA) framework and to recommend a non-comprehensive list of environmental indicators and LCIA characterization factors for (1) climate change, (2) fine particulate matter impacts on human health, (3) water consumption impacts (both scarcity and human health) and (4) land use impacts on biodiversity.

Methods: The consensus building process involved more than 100 world-leading scientists in task forces via multiple workshops. Results were consolidated during a 1-week Pellston Workshop in January 2016 leading to the following recommendations. Results and discussion: LCIA framework: The updated LCIA framework now distinguishes between intrinsic, instrumental and cultural values, with disability-adjusted life years (DALY) to characterize damages on human health and with measures of vulnerability included to assess biodiversity loss. Climate change impacts: Two complementary climate change impact categories are recommended: (a) The global warming potential 100 years (GWP 100) represents shorter term impacts associated with rate of change and adaptation capacity, and (b) the global temperature change potential 100 years (GTP 100) characterizes the century-scale long term impacts, both including climate-carbon cycle feedbacks for all climate forcers. Fine particulate matter (PM2.5) health impacts: Recommended characterization factors (CFs) for primary and secondary (interim) PM2.5 are established, distinguishing between indoor, urban and rural archetypes. Water consumption impacts: CFs are recommended, preferably on monthly and watershed levels, for two categories: (a) The water scarcity indicator AWare characterizes the potential to deprive human and ecosystems users and quantifies the relative Available WAter REMaining per area once the demand of humans and aquatic ecosystems has been met, and (b) the impact of water consumption on human health assesses the DALYs from malnutrition caused by lack of water for irrigated food production. Land use impacts: CFs representing global potential species loss from land use are proposed as interim recommendation suitable to assess biodiversity loss due to land use and land use change in LCA hotspot analyses. Conclusions: The recommended environmental indicators may be used to support the UN Sustainable Development Goals in order to quantify and monitor progress towards sustainable production and consumption. These indicators will be periodically updated, establishing a process for their stewardship.

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Michigan, IRTA - Institute of Agrifood Research and Technology, Ecole Polytechnique de Montreal, Norwegian University of Science and Technology, University of California at Berkeley, United Nations Environment Programme, National Institute of Advanced Industrial Science and Technology, Swiss Federal Institute of Technology, SETAC, treeze Ltd.
Authors: Jolliet, O. (Ekstern), Antón, A. (Ekstern), Boulay, A. (Ekstern), Cherubini, F. (Ekstern), Fantke, P. (Intern), Levasseur, A. (Ekstern), McKone, T. E. (Ekstern), Michelsen, O. (Ekstern), Mila i Canals, L. (Ekstern), Motoshita, M. (Ekstern), Pfister, S. (Ekstern), Verones, F. (Ekstern), Vigon, B. (Ekstern), Frischknecht, R. (Ekstern), Hauschild, M. Z. (ed.) (Intern)
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Globalisation and Mainstreaming of LCA

The chapter describes how a globalised economy exacerbates the need of a mainstreaming of LCA, in particular the emergence of long, complex and geographically highly dispersed global value chains (GVCs). In documenting the three phases of the UNEP-SETAC Life Cycle Initiative, a conventional roadmap for global mainstreaming of LCA is drawn. However, the questioning by some South governments of the rationale and a North methodological bias of LCA draws attention to the significance of national and local contexts in developing countries. The chapter argues a more elaborate concept for building capacity for LCA in developing countries and suggests how to strategize national LCA agendas.

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Authors: Wangel, A. (Intern)
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Global outlook on energy technology development

Goal Definition
The goal definition is the first phase of an LCA and determines the purpose of a study in detail. This chapter teaches how to perform the six aspects of a goal definition: (1) Intended applications of the results, (2) Limitations due to methodological choices, (3) Decision context and reasons for carrying out the study, (4) Target audience, (5) Comparative studies to be disclosed to the public and (6) Commissioner of the study and other influential actors. The instructions address both the conduct and reporting of a goal definition and are largely based on the ILCD guidance document (EC-JRC in European Commission—Joint Research Centre—Institute for Environment and Sustainability: International Reference Life Cycle Data System (ILCD) Handbook—General Guide for Life Cycle Assessment—Detailed Guidance. Publications Office of the European Union, Luxembourg 2010).
Health Impacts and Economic Costs of Air Pollution in the Metropolitan Area of Skopje

Urban outdoor air pollution, especially particulate matter, remains a major environmental health problem in Skopje, the capital of the former Yugoslav Republic of Macedonia. Despite the documented high levels of pollution in the city, the published evidence on its health impacts is as yet scarce. We obtained, cleaned, and validated Particulate Matter (PM) concentration data from five air quality monitoring stations in the Skopje metropolitan area, applied relevant concentration-response functions, and evaluated health impacts against two theoretical policy scenarios. We then calculated the burden of disease attributable to PM and calculated the societal cost due to attributable mortality. In 2012, long-term exposure to PM2.5 (49.2 μg/m³) caused an estimated 1199 premature deaths (CI95% 821-1519). The social cost of the predicted premature mortality in 2012 due to air pollution was estimated at between 570 and 1470 million euros. Moreover, PM2.5 was also estimated to be responsible for 547 hospital admissions (CI95% 104-977) from cardiovascular diseases, and 937 admissions (CI95% 937-1869) for respiratory disease that year. Reducing PM2.5 levels to the EU limit (25 μg/m³) could have averted an estimated 45% of PM-attributable mortality, while achieving the WHO Air Quality Guidelines (10 μg/m³) could have averted an estimated 77% of PM-attributable mortality. Both scenarios would also attain significant reductions in attributable respiratory and cardiovascular hospital admissions. Besides its health impacts in terms of increased premature mortality and hospitalizations, air pollution entails significant economic costs to the population of Skopje. Reductions in PM2.5 concentrations could provide substantial health and economic gains to the city.
Heat and health in Antwerp under climate change: Projected impacts and implications for prevention

Background Excessive summer heat is a serious environmental health problem in several European cities. Heat-related mortality and morbidity is likely to increase under climate change scenarios without adequate prevention based on locally relevant evidence. Methods We modelled the urban climate of Antwerp for the summer season during the period 1986–2015, and projected summer daily temperatures for two periods, one in the near (2026–2045) and one in the far future (2081–2100), under the Representative Concentration Pathway (RCP) 8.5. We then analysed the relationship between temperature and mortality, as well as with hospital admissions for the period 2009–2013, and estimated the projected mortality in the near future and far future periods under changing climate and population, assuming alternatively no acclimatization and acclimatization based on a constant threshold percentile temperature. Results During the sample period 2009–2013 we observed an increase in daily mortality from a maximum daily temperature of 26 °C, or the 89th percentile of the maximum daily temperature series. The annual average heat-related mortality in this period was 13.4 persons (95% CI: 3.8–23.4). No effect of heat was observed in the case of hospital admissions due to cardiorespiratory causes. Under a no acclimatization scenario, annual average heat-related mortality is multiplied by a factor of 1.7 in the near future (24.1 deaths/year CI 95%: 6.78–41.94) and by a factor of 4.5 in the far future (60.38 deaths/year CI 95%: 17.00–105.11). Under a heat acclimatization scenario, mortality does not increase significantly in the near or in the far future. Conclusion These results highlight the importance of a long-term perspective in the public health prevention of heat exposure, particularly in the context of a changing climate, and the calibration of existing prevention activities in light of locally relevant evidence.
Household electricity consumers' incentive to choose dynamic pricing under different taxation schemes: Electricity consumers' incentive to choose dynamic pricing

Dynamic pricing of retail electricity, as opposed to the widely applied average pricing, has often been proposed to enhance economic efficiency through demand response. The development of variable production from renewable energies and expectations about the installation of heat pumps and electric vehicles has now reinforced interest in flexible demand and dynamic pricing. With a roll-out of smart metering one important technical hurdle is going to be cleared, and dynamic retail pricing may soon become an eligible option for many households. We quantify the potential incentives to adopt new pricing schemes using exemplary Danish data. Until now, limited activity of household consumers on retail markets indicates that switching supplier or contract is perceived costly. We apply the concept of switching costs to explain this hesitant behavior, and use it to estimate a threshold level based on recent observations in the Danish market. We calculate potential savings from dynamic pricing and show how the choice of electricity taxation technique may hamper or enhance potential benefits. In the light of switching costs, our results suggest that the combination of smart meter roll-out and dynamic pricing offerings might be insufficient to convince the majority of households to switch contracts and become active in response to prices, unless they hold a substantial flexibility potential. Dynamic taxation, even if applied to parts of the levies, could contribute significantly to inducing flexible consumption.

General information
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How the reverse supply chain impacts the firm's financial performance: A manufacturer's perspective

Purpose – Although manufacturers have traditionally viewed reverse supply chain (RSC) activities as a costly nuisance, more recent research has found that the RSC can contribute to the firm’s financial performance. This paper identifies how the RSC can contribute to the firm’s financial performance and examines the exogenous contingency factors decisive for the contribution’s size. Because the exogenous factors are outside the control of the firm’s operations and supply chain management, the factors influence the RSC’s financial contribution irrespective of managerial policies and design decisions.

Design/Methodology/Approach – The paper applies a systematic literature review using the sequence of planning the review, searching and screening literature, extracting information from the selected literature, and synthesizing and analyzing findings. 112 papers were included.

Findings – The study has identified 15 distinct opportunities for RSC-contribution to the firm’s financial performance. The study has identified 56 contingency factors. These are related to market segmentation, customer behavior, product design, and the firm’s distributor network. The study includes an interrelationship network between factors and the RSC’s contribution.

Practical implications – For managers, the paper shows how the RSC can increase the firm’s financial performance and which contingency factors determine whether operating a RSC will be financially viable if implemented.

Originality/Value – While extant literature includes several reviews about RSC-related managerial policies and design decisions, this paper contains the very first collection of RSC-contribution opportunities available to manufacturers as well as the first review of exogenous contingency factors.

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Organisations: Center for Bachelor of Engineering Studies, Afdelingen for Produktionsudvikling, Operations Management, Department of Management Engineering, Management Science, Transport DTU, University of Warwick
Authors: Larsen, S. B. (Intern), Masi, D. (Ekstern), Feibert, D. C. (Intern), Jacobsen, P. (Intern)
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Scopus rating (2013): SJR 1.299 SNIP 1.84 CiteScore 3.13
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Scopus rating (2012): SJR 1.121 SNIP 1.404 CiteScore 2.58
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How to bring absolute sustainability into decision-making: An industry case study using a Planetary Boundary-based methodology

The Planetary Boundaries concept has emerged as a framework for articulating environmental limits, gaining traction as a basis for considering sustainability in business settings, government policy and international guidelines. There is emerging interest in using the Planetary Boundaries concept as part of life cycle assessment (LCA) for gauging absolute environmental sustainability. We tested the applicability of a novel Planetary Boundaries-based life cycle impact assessment methodology on a hypothetical laundry washing case study at the EU level. We express the impacts corresponding to the control variables of the individual Planetary Boundaries together with a measure of their respective uncertainties. We tested four sharing principles for assigning a share of the safe operating space (SoSOS) to laundry washing and assessed if the impacts were within the assigned SoSOS. The choice of sharing principle had the greatest influence on the outcome. We therefore highlight the need for more research on the development and choice of sharing principles. Although further work is required to operationalize Planetary Boundaries in LCA, this study shows the potential to relate impacts of human activities to environmental boundaries using LCA, offering company and policy decision-makers information needed to promote environmental sustainability.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Unilever
Authors: Ryberg, M. W. (Intern), Owaniak, M. (Intern), Clavreul, J. (Ekstern), Mueller, C. (Ekstern), Sim, S. (Ekstern), King, H. (Ekstern), Hauschild, M. Z. (Intern)
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How to scope configuration projects and manage the knowledge they require

Purpose
This paper aims to explore the use of the knowledge management (KM) perspective for configuration projects. Configuration projects implement configurators as information technology systems that help companies manage the specification process of customised products. An effective method of retrieving and formalising knowledge for
configurators is essential, because it can reduce the risk of unsuccessful implementation and the time and effort required for development. Unfortunately, no standard KM frameworks are available specifically for configuration projects. This study identifies the knowledge necessary for different phases of a configuration project (which knowledge, for what purpose and from what sources), examines how it is transformed during a configuration project (what KM activities and tools are used) and establishes how the knowledge can be documented for future maintenance and updates.

**Design/methodology/approach**

This paper proposes a four-step framework for making the KM process more efficient in configuration projects. The framework is based on the literature, developed in collaboration with industrial partners and tested on four configuration projects in two engineering companies. The framework is a structured KM approach designed to save time for both domain experts and the configuration team. The authors have used a qualitative exploratory design based on multiple data sources: documentation, workshops and participant observation.

**Findings**

The proposed framework comprises four steps: determination of the system’s scope, to establish the project’s goal based on stakeholders’ requirements and prioritise the required products and processes; knowledge acquisition, to classify the knowledge according to the desired output and identify different knowledge sources; modelling and knowledge validation; and documentation and maintenance, to ensure that the KM system can be maintained and updated in the future.

**Research limitations/implications**

Because the framework is tested on a limited number of cases, its generalisability may be limited. However, focusing on a few case applications allows us to assess the effectiveness of the framework in detail and in depth to identify the practical challenges of applying it. The results of the tests support the framework’s validity. Although the framework is designed mainly for engineering companies, other industries could benefit from using it as well.

**Practical implications**

The individual steps of the framework create a structured approach for the KM process. Thus, the approach can save both time and resources for companies, without the need for additional investment.

**Originality/value**

A standard framework is lacking in the literature on KM for configuration projects. This study fills that gap by developing a KM framework for configuration projects, based on KM frameworks developed for IT projects, and KM tools.

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Excess heat is present in many sectors, and its utilization could reduce the primary energy use and emission of greenhouse gases. This work presents a geographical mapping of excess heat, in which excess heat from the industry and utility sector was distributed to specific geographical locations in Denmark. Based on this mapping, a systematic approach for identifying cases for the utilization of excess heat is proposed, considering the production of district heat and process heat, as well as power generation. The technical and economic feasibility of this approach was evaluated for six cases. Special focus was placed on the challenges for the connection of excess heat sources to heat users. To account for uncertainties in the model input, different methods were applied to determine the uncertainty of the results and the most important model parameters. The results show how the spatial mapping of excess heat sources can be used to identify their utilization potentials. The identified case studies show that it can be economically feasible to connect the heat sources to the public energy network or to use the heat to generate electricity. The uncertainty analysis suggests that the results are indicative and are particularly useful for a fast evaluation, comparison and prioritization of possible matches. The excess heat temperature and obtainable energy price were identified as the most important input parameters.
Identifying Disruptive Technologies in Design: Horizon Scanning in the Early Stages of Design

Technology development is accelerating, driving disruption. Design is seen as key differentiator in creating innovative offerings but few design methods consider future technologies explicitly. In this article, we explore how a foresight method, namely horizon scanning, may be applied in a design context to anticipate disruption of construction. By means of a 3-step horizon scan, we identify 133 potentially disruptive technologies from across industries. We find that when preparing for disruption, design may benefit from the future-oriented and technology-focused features of horizon scanning.

Illustrative Case Study: Life Cycle Assessment of Four Window Alternatives

This report serves as an example report on how to perform an LCA according to the guidance given in Chap. 37 and how to structure the report according to the reporting template in Chap. 38. The goals of the LCA were (i) to perform a benchmarking of a prototype wood/composite (W/C) window made out of glass fibre against three alternative window types currently offered in the market (made of wood (W), wood/aluminium (W/ALU), and PVC) and (ii) to identify environmental hotspots for each window system.
Improving environmental performance of post-harvest supply chains of fruits and vegetables in Europe: Potential contribution from ultrasonic humidification

Post-harvest losses of fruits and vegetables during refrigerated storage, transportation and retail are an important contributor to total environmental impacts of food supply chains in Europe. Ultrasonic humidification can reduce these post-harvest losses, but it is currently unknown whether implementing the technology in practice improves the environmental performance of the supply chains. Here, using life cycle assessment we showed that ultrasonic humidification has the potential to reduce environmental impacts, including climate change impacts, of selected fruits and vegetables in Europe by up to 23% compared to conventional supply chains. The greatest potential is obtained when humidifiers are applied to fruits and vegetables chains with total inherent losses higher than 24% and when humidifiers allow reducing post-harvest losses in each post-harvest stage by 20% or more. Our results suggest that humidification may be an attractive technology for making supply chain management more sustainable.

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Improving the representation of modal choice into bottom-up optimization energy system models - The MoCho-TIMES model

This study presents MoCho-TIMES, an original methodology for incorporating modal choice into energy-economy-environment-engineering (E4) system models. MoCho-TIMES addresses the scarce ability of E4 models to realistically depict behaviour in transport and allows for modal shift towards transit and non-motorized modes as a new dimension for decarbonising the transportation sector. The novel methodology determines endogenous modal shares by incorporating variables related to the level-of-service (LoS) of modes and consumers' modal perception within the E4 modeling framework. Heterogeneity of transport users is introduced to differentiate modal perception and preferences across different consumer groups, while modal preferences are quantified via monetization of intangible costs. A support transport simulation model consistent with the geographical scope of the E4 model provides the data and mathematical expressions required to develop the approach. This study develops MoCho-TIMES in the standalone transportation sector of TIMES-DK, the integrated energy system model for Denmark. The model is tested for the Business as Usual scenario and for four alternative scenarios that imply diverse assumptions for the new attributes introduced. The results show that different assumptions for the new attributes affect modal shares and CO2 emissions. MoCho-TIMES inaugurates the possibility to perform innovative policy analyses involving new parameters to the E4 modeling framework. The results find that authority's commitment to sustainability is crucial for a paradigmatic change in the transportation sector.

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Innovation and employee injury risk in automotive disassembly operations

Engineering innovations in car disassembly systems are studied for affects on system operators’ risk of repetitive strain injury (RSI). Objective instrumented measures of injury risk factors with synchronised video-based task analyses were used to examine changes in operators’ RSI risk during two cases of engineering innovation: (1) a shift in industrial model from traditional extracting saleable parts to line-based full material recovery, and (2) the prospective effects of a simulated “Lean”-inspired process improvement in the line system. Both cases of innovation showed significantly increased movement speeds and reduced muscular recovery opportunities, implying increased RSI risk. This case study reveals a mechanism by which innovation may increase RSI risks for operators. Managers responsible for engineering innovation should ensure their teams have the tools and mandate necessary to control injury hazards as part of the development and design process. These cases suggest how failure to manage RSI hazards in the innovation process may allow increases of injury risks that can compromise operational performance. This “innovation pitfall” has implications for operator health and organisational sustainability. Alternative pathways are discussed.
Institutional capacities for NDC implementation: a guidance document

Nationally Determined Contributions (NDCs) are commitments by parties to the United Nations Framework Convention on Climate Change (UNFCCC). Each party defines its own NDC, which in all cases includes mitigation-related goals and, in most cases, adaptation-related goals too. For most parties, the time horizon for implementing NDC goals is 2030. By ratifying the 2015 Paris Agreement of the UNFCCC, parties commit to submitting revised NDCs every five years. The revised NDCs must have an implementation period of five years, and must be submitted five years in advance of the start date for implementation. The Paris Agreement further calls on parties to increase progressively the level of ambition of their NDCs.

Implementation of the first NDCs is to start in 2021. Delivering on this requirement and within this time horizon requires increased institutional capacities on the part of national governments. These capacities relate to six main sets of issues:

- Ability to launch and coordinate a whole-of-government process, incorporating contributions from all relevant governmental agencies, and non-governmental parties, as relevant.
- Capacity to integrate NDC priorities into sectoral and cross-sectoral programmes and projects, to ensure that the latter do not undermine efforts to achieve the former, or vice versa.
- Resources to train relevant government agency staff (and possibly non-government agency staff too), with a view to increasing the technical and managerial skills of these individuals.
- Capability to engage all relevant stakeholders, through consultations designed to elicit their input, so that it can be taken into consideration, thus increasing buy-in from stakeholders.
- Competence to conduct a regulatory framework revision, to streamline and complement existing laws and regulations, and strengthen related governmental processes and entities.
- Aptitude to monitor progress, and report on it, making best use of existing data collection mechanisms, and strengthening related capabilities wherever needed.
Interactions between perceived uncertainty types in service dyads
This paper investigates the dynamic interactions between uncertainty types in service dyads between servitized manufacturers and their customers. This is an important research area because servitized manufacturers face multi-source uncertainty and need to manage this uncertainty effectively to avoid business failure. A conceptual framework of four uncertainty types is investigated: environmental, technological, organisational, and relational uncertainty. We present insights from four empirical cases of service dyads collected via multiple sources of evidence including 54 semi-structured interviews, observations, and secondary data. The cases show seven interaction paths with direct knock-on effects between two uncertainty types and indirect knock-on effects between three or four uncertainty types. The findings suggest a causal chain from environmental, technological, organisational, to relational uncertainty. This research contributes to the servitization literature by (i) confirming the existence of uncertainty types, (ii) providing an in-depth characterisation of technological uncertainty, and (iii) showing the interaction paths between four uncertainty types in the form of a causal chain.

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Scopus rating (2005): SJR 0.821 SNIP 1.337
Scopus rating (2004): SJR 0.76 SNIP 1.188
Introduction: Energy Systems Modelling for a Sustainable World

Since the first oil crisis more than forty years ago, concerns regarding energy security, economic impacts, air pollution, climate change, energy poverty, and societal well-being have been repeatedly calling for an energy revolution. The 2030 Agenda for Sustainable Development and the Paris Agreement on climate change are unambiguous: in order to identify the key technologies to achieve the energy revolution and the appropriate programs and policies that will bring them to the market, decision makers need robust policy analyses that encompass the relevant global, regional national and local factors, as well as increasing details and synergies across the complex issues which characterizes the energy system. Given their intrinsic nature, energy system models are particularly well suited to provide comprehensive, integrated and robust information on the short, medium and long term transformation of the energy systems under multiple constraints—economic, technology, environment and societal factors. This chapter introduces the development and use of energy system models by the members of the IEA Technology Collaboration Programme on energy systems modelling, namely the IEA Energy Technology Systems Analysis Program (IEA-ETSAP) to support the definition of energy and climate policies in an increasing number of countries. It also provides an overview of the 23 case studies presented in this book, all exploring the potential for feasible roadmaps at global, national or local scale compatible with a well below 2 °C future. They all show that those roadmaps are extremely challenging, and early action is essential.

Introduction to LCA Methodology

In order to offer the reader an overview of the LCA methodology in the preparation of the more detailed description of its different phases, a brief introduction is given to the methodological framework according to the ISO 14040 standard and the main elements of each of its phases. Emphasis is on the iterative nature of the LCA process with its many feedback loops between the different phases. It is explained how the integrated use of sensitivity analysis helps identify key assumptions and key data and thus ensure effectiveness by directing the focus of the LCA practitioner to those parts of the study where additional work contributes most to strengthen the results and conclusions of the study.
Introduction to Part III: Application of LCA in Practice

While Part II of this book presents the theoretical foundation and methodology of LCA, Part III is dedicated to a comprehensive discussion of how this methodology has been adapted and applied in practice. The chapters of Part III provide an easily readable and accessible introduction to different fields of LCA application with their specific decision situations, user competences and stakeholder needs, and associated methodological challenges and adaptations.
Latency and Criticality of Uncertainties in the Development of Product-Service Systems

Servitization requires manufacturers to develop new business models - compound offerings between products and services often referred to as Product-Service Systems (PSS). The development of PSS goes beyond the traditional product-development practices, requiring new processes and capabilities due to the high levels of uncertainty caused by the novelty and complexity of developing the product and the service in parallel. Uncertainty is further increased through mostly long life cycles of PSS and organisational complexity caused by a high degree of stakeholder involvement (Wolfenstetter et al., 2015). The lack of managing these uncertainties often leads to large-scale losses for the provider, also known as the "servitization paradox". Uncertainty has been characterised by a framework in product development literature in terms of its latency and criticality (O'Connor and Rice, 2013). Latency describes whether the uncertainty may be recognisable in time and distinguishes unanticipated and anticipated uncertainties. Criticality defines the influence on the project's immediate progress and distinguishes routine (and thus foreseeable) and extraordinary (and thus unforeseeable) events. This research aims to apply this framework which stems from the product-development literature to PSS development to explore the phenomenon of uncertainty in this context.
LCA and Sustainability
LCA is often presented as a sustainability assessment tool. This chapter analyses the relationship between LCA and sustainability. This is done by first outlining the history of the sustainability concept, which gained momentum with the Brundtland Commission’s report ‘Our Common Future report’ in 1987, and presenting the most common interpretations of the concept, which generally comprise four dimensions: (1) measures of welfare, (2) inter-generational equity, (3) intra-generational equity and (4) interspecies equity. The relevance of environmental protection for dimensions 2 and 4 is then demonstrated, and the strategy of LCA to achieving environmental protection, namely to guide the reduction of environmental impacts per delivery of a function, is explained. The attempt to broaden the scope of LCA, beyond environmental protection, by so-called life cycle sustainability assessment (LCSA) is outlined. Finally, the limitations of LCA in guiding a sustainable development are discussed.

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LCA Applications
The chapter gives examples of applications of LCA by the central societal actors in government, industry and citizens, and discusses major motivations and challenges for the use of LCA to support science-based decision-making from their respective perspectives. We highlight applications of LCA in policy formulation, implementation and evaluation, present different purposes of LCA application in industry at both product and corporate levels, and discuss challenges for LCA applications in small- and medium-sized enterprises. Our synthesis demonstrates the importance of LCA as a tool to quantify environmental impacts of products and systems and support decisions around production and consumption and highlights factors that prevent its even more widespread application.

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**LCA Cookbook**

The LCA cookbook presents the provisions and actions from the ILCD Handbook that are central in the performance of an LCA. The selection is intended to cover all those activities that an LCA practitioner needs to undertake in a typical process-LCA, and the presentation follows the normal progression of the LCA work according to the ISO framework. For explanation of the reasoning behind the actions, the reader is referred to the presentation of the methodological elements in Part 2 of the book.

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**LCA History**

The idea of LCA was conceived in the 1960s when environmental degradation and in particular the limited access to resources started becoming a concern. This chapter gives a brief summary of the history of LCA since then with a focus on the fields of methodological development, application, international harmonisation and standardisation, and dissemination. LCA had its early roots in packaging studies and focused mainly on energy use and a few emissions, spurring a largely un-coordinated method development in the US and Northern Europe. Studies were primarily done for companies, who used them internally and made little communication to stakeholders. After a silent period in the 1970s, the 1980s and 1990s saw an increase in methodological development and international collaboration and coordination in the scientific community and method development increasingly took place in universities. With the consolidation of the methodological basis, application of LCA widened to encompass a rapidly increasing range of products and systems with studies commissioned or performed by both industry and governments, and results were increasingly communicated through academic papers and industry and government reports. To this day, methodological development has continued, and increasing attention has been given to international scientific consensus building on central parts of the LCA methodology, and standardisation of LCA and related approaches.

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LCA of Biofuels and Biomaterials

Biofuels and biomaterials can today substitute many commodities produced from fossil resources, and the bio-based production is increasing worldwide. As fossil resources are limited, and the use of such resources is a major contributor to global warming and other environmental impacts, the potential of bio-products as substitutes for fossil-based products is receiving much attention. According to many LCA studies, bio-products are environmentally superior to fossil products in some life cycle impact categories, while the picture is often opposite in others. Bio-products is a highly diverse group of products and the environmental profile of bio-products relative to their fossil counterparts is case specific and to a high degree depending on the feedstock used. This illustrates the importance of conducting case specific LCAs for determining the environmental profile of bio-products relative to fossil ones, and emphasises the importance of including all relevant impact categories, in order to avoid problem shifting.

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LCA of Buildings and the Built Environment

How we design human settlements has a profound influence on society's environmental pressures. This chapter explores the current state of LCA applied to two scales of human settlements; individual buildings and the built environment, where the built environment is understood as a collection of autonomous buildings along with the infrastructure and human activity between those buildings. The application of LCA to buildings has seen growing interest in recent years, partly as a result of the increased application of environmental certification to buildings. General findings are that the use stage of the building tends to dominate environmental impacts, though as buildings become increasingly energy efficient, life cycle impacts shift towards other stages. LCA of built environments has been a useful supplement to mass-based urban environmental assessments, highlighting the importance of embodied environmental impacts in imported goods and showing interesting trade-offs between dense urban living and the greater purchasing power of wealthy urbanites. LCAs of human settlements also face difficult challenges; the long use stage (often decades) introduces high uncertainty regarding the end-of-life stage; evolving electrical mixes throughout the use stage; gaps in consumption data at the city level. This chapter endeavours to elucidate the strengths, research needs and methodological shortcomings of LCA as applied to buildings and the built environment, showing that they can act as complimentary tools to help society’s shift towards a sustainable future.

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LCA of Chemicals and Chemical Products
This chapter focuses on the application of Life Cycle Assessment (LCA) to evaluate the environmental performance of chemicals as well as of products and processes where chemicals play a key role. The life cycle stages of chemical products, such as pharmaceuticals drugs or plant protection products, are discussed and differentiated into extraction of abiotic and biotic raw materials, chemical synthesis and processing, material processing, product manufacturing, professional or consumer product use, and finally end-of-life. LCA is discussed in relation to other chemicals management frameworks and concepts including risk assessment, green and sustainable chemistry, and chemical alternatives assessment. A large number of LCA studies focus on contrasting different feedstocks or chemical synthesis processes, thereby often conducting a cradle to (factory) gate assessment. While typically a large share of potential environmental impacts occurs during the early product life cycle stages, potential impacts related to chemicals that are found as ingredients or residues directly in products can be dominated by the product use stage. Finally, methodological challenges in LCA studies in relation to chemicals are discussed including the choice of functional unit, defining the system boundaries, quantifying emissions for many thousands of marketed chemicals, characterising emissions in terms of toxicity and other impacts, and finally interpreting LCA results. The chapter is relevant for LCA students and practitioners who wish to gain basic understanding of LCA studies of products or processes with chemicals as a key aspect.

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LCA of Energy Systems
Energy systems are essential in the support of modern societies' activities, and can span a wide spectrum of electricity and heat generation systems and cooling systems. Along with their central role and large diversity, these systems have been demonstrated to cause serious impacts on human health, ecosystems and natural resources. Over the past two decades, energy systems have thus been the focus of more than 1000 LCA studies, with the aim to identify and reduce these impacts. This chapter addresses LCA applications to energy systems for generation of electricity and heat. The chapter gives insight into the LCA practice related to such systems, offering a critical review of (i) central methodological aspects, including the definition of the goals and scopes of the studies, their coverage of the system life cycle and the environmental impacts, and (ii) key findings of the studies, particularly aimed at identifying environmental hotspots and impact patterns across different energy sources. Based on this literature review recommendations and guidelines are issued to LCA practitioners on key methodological aspects that are important for a proper conduct of LCA studies of energy systems and thus ensuring the reliability of the LCA results provided to decision- and policy-makers.

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LCA of Food and Agriculture

This chapter deals with the application of Life Cycle Assessment to evaluate the environmental sustainability of agriculture and food processing. The life cycle of a food product is split into six stages: production and transportation of inputs to the farm, cultivation, processing, distribution, consumption and waste management. A large number of LCA studies focus on the two first stages in cradle-to-farm gate studies, as they are the stages where most impacts typically occur, due to animal husbandry and manure handling, production and use of fertilisers and the consumption of fuel to operate farm machinery. In the processing step, the raw agricultural product leaving the farm gate is converted to a food item that can be consumed by the user. Distribution includes transportation of the food product before and after processing. In the consumption stage, environmental impacts arise due to storage, preparation and waste of the food. In the waste management stage, food waste can be handled using a number of technologies, such as landfilling, incineration, composting or digestion. A number of case studies are looked at here where the life cycles of typical food products (meat, cheese, bread, tomatoes, etc.), and an entire diet are discussed. Other case studies deal with what LCA can conclude on the differences between conventional and organic farming, and the perceived advantages of local food items. Finally, methodological issues in agricultural LCA are discussed: the choice of functional unit, setting the boundary between technosphere and ecosphere, modelling flows of nutrients and pesticides, and the generally limited number of impact categories included in LCA studies.

LCA of Nanomaterials

Application of nanomaterials in products has led to an increase in number of nanoproducts introduced to the consumer market. However, along with new and improved products, there is a concern about the potential life cycle environmental impacts. Life cycle assessment is able to include a wide range of environmental impacts but, due to data limitations, it is commonly applied with focus on the cradle-to-gate part of the nanoproducts life cycle, neglecting use and disposal of the products. These studies conclude that nanomaterials are more energy demanding and have an inferior environmental profile than conventionally used materials, but functional units of these comparisons need to consider the use stage benefits attained through nanomaterials. A particular assessment challenge is the lack of understanding of the toxicological mechanisms related to potential release, fate and effects of nanomaterials when penetrating into living organisms. This is especially relevant for the freshwater compartment, as it is a common recipient.
Today, there is increasing interest in applying LCA to support decision-makers in contaminated site management. In this chapter, we introduce remediation technologies and associated environmental impacts, present an overview of literature findings on LCA applied to remediation technologies and present methodological issues to consider when conducting LCAs within the area. Within the field of contaminated site remediation, a terminology distinguishing three types of environmental impacts: primary, secondary and tertiary, is often applied. Primary impacts are the site-related impacts due to the contamination in the ground, secondary impacts are the impacts related to clean-up of the site, and tertiary impacts are the impacts associated with the future use of the site. The major methodological issues to consider when conducting LCA are: (i) defining a functional unit that considers time frame and efficiency of remediation, which are important for assessment or primary impacts; (ii) robust assessment of primary impacts using site-specific fate and exposure models; (iii) weighting of primary and secondary (or tertiary) impacts to evaluate trade-offs between life cycle impacts from remediation and reduced pressure locally; and (iv) comparison with a no action scenario to determine whether there is a net environmental benefit from remediation. Overall, LCA is an important tool for the assessment of the secondary environmental impacts of remediation, and occasionally it has also been used to assess primary and tertiary impacts. In order to obtain robust decisions for the management of contaminated sites, the combination of LCA with other tools is necessary, including multi-criteria decision analysis tools, site-specific fate and exposure models and consideration of stakeholders' views.

LCA of Soil and Groundwater Remediation

The chapter explores the application of LCA to solid waste management systems through the review of published studies on the subject. The environmental implications of choices involved in the modelling setup of waste management systems are increasingly in the spotlight, due to public health concerns and new legislation addressing the impacts from managing our waste. The application of LCA to solid waste management systems, sometimes called “waste LCA”, is distinctive in that system boundaries are rigorously defined to exclude all life cycle stages except from the end-of-life. Moreover, specific methodological challenges arise when investigating waste systems, such as the allocation of impacts and the consideration of long-term emissions. The complexity of waste LCAs is mainly derived from the variability of the object under study (waste) which is made of different materials that may require different treatments. This chapter attempts to address these challenges by identifying common misconceptions and by providing methodological guidance for alleviating the associated uncertainty. Readers are also provided with the list of studies reviewed and key sources for reference to implement LCA on solid waste systems.

LCA of Solid Waste Management Systems

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LCA of Wastewater Treatment
The main purpose of wastewater treatment is to protect humans against waterborne diseases and to safeguard aquatic bio-resources like fish. The dominating environmental concerns within this domain are indeed still potential aquatic eutrophication/oxygen depletion due to nutrient/organic matter emissions and potential health impacts due to spreading of pathogens. Anyway, the use of treatment for micro-pollutants is increasing and a paradigm shift is ongoing — wastewater is more and more considered as a resource of, e.g. energy, nutrients and even polymers, in the innovations going on. The focus of LCA studies addressing wastewater treatment have from the very first published cases, been on energy and resource consumption. In recent time, the use of characterisation has increased and besides global warming potential, especially eutrophication is in focus. Even the toxicity-related impact categories are nowadays included more often. Application of LCA for comparing avoided against induced impacts, and hereby identifying trade-offs when introducing new technology, is increasingly used. A typical functional unit is the treatment of one cubic metre of wastewater which should be well defined regarding composition. Depending on the goal and scope of the study, all life cycle stages have the potential of being significant, though disposal of infrastructure seems to be the least important for the impact profile in many cases. No inventory data and none of the conventional impact categories (except stratospheric ozone depletion if emission of N2O is excluded) should be ruled out; but eutrophication and ecotoxicity are in many cases among the dominating ones.

Life-cycle assessment for coal-based methanol production in China
More methanol is produced and used in China than in any other country. China has a great deal of coal, less oil, and little gas, so the Chinese government is enthusiastically developing the coal-based chemical industry, of which coal-based methanol production is an important part. Coal-based methanol production strongly affects the environment, so the environmental impacts of coal-based methanol production processes must be assessed. Here, two life-cycle assessment models are established using GaBi6 software, and the models and local data for coal-based methanol production are used to establish a life-cycle inventory. The environmental impacts of two typical coal-based methanol production techniques are evaluated using the CML 2001 (mid-point level) method and the Eco-indicator 99 (end-point level) models. The results indicated that less environment harm is caused by producing methanol using the coal coking technology than by producing methanol using the coal gasification technology, especially in terms of acidification, global warming, and
photochemical oxidation. In particular, significantly less environmental harm in terms of climate change and radiation is caused by the coal coking technology than by the coal gasification technology. Different sub-processes clearly make different contributions to environmental harm. The results indicated that the methanol production process, heating, and desalination are the main sources of environmental harm for both the coal gasification technology and coal coking technology. Importantly, the public engineering process rather than the methanol production process itself was found to determine emissions for the different methanol production methods.

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BFI (2008): BFI-level 2
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Increasing pressure to the environment due to human activities manifests the necessity of applying new approaches to determine the environmental impact of a new product before scale-up. Nanoadsorbents as an emerging product and a special application of nanomaterial play an important role in the control and removal of environmental pollutants. This application is still an emerging technology at the early stages of development. Hence, the heart of this study enables an environmental assessment of nanoadsorbents as an emerging product. In addition, the environmental impacts of synthesized adsorbents including cumulative energy demand, climate change, water use, human toxicity, and ecotoxicity are investigated by a stepwise procedure during their synthesis processes, regarding their potential to remove mercury from polluted water. Accordingly, characterization results showed that although the process of the functionalization of nanoadsorbents leads to the increase of the adsorption capacity of nanoadsorbents, it is also paired with a significant enhancement of negative environmental impacts. The results of t-test comparing the cradle-to-use life cycle impacts of studied impact categories for 1 kg Hg removal between MGO-NH-SH and Fe3O4@SiO-NH-SH estimated approximately 37, 34, 40, 31, and 26% more for climate change, water use, cumulative energy demand, human toxicity, and ecotoxicity, respectively for the latter. Hence, according to the results, Fe3O4@SiO-NH-SH revealed the larger environmental impacts from the same functional unit, 1 kg Hg removal, compared with MGO-NH-SH. Finally, not only does this study represents the LCA of two different kinds of mercury adsorbents, but it also provides a guideline for determining the environmental impacts of similar nanoadsorbents.
This book is a uniquely pedagogical while still comprehensive state-of-the-art description of LCA-methodology and its broad range of applications. The five parts of the book conveniently provide: I) the history and context of Life Cycle Assessment (LCA) with its central role as quantitative and scientifically-based tool supporting society’s transitioning towards a sustainable economy; II) all there is to know about LCA methodology illustrated by a red-thread example which evolves as the reader advances; III) a wealth of information on a broad range of LCA applications with dedicated chapters on policy development, prospective LCA, life cycle management, waste, energy, construction and building, nanotechnology, agrifood, transport, and LCA-related concepts such as footprinting, ecolabelling, design for environment, and cradle to cradle. IV) A cookbook giving the reader recipes for all the concrete actions needed to perform an LCA. V) An appendix with an LCA report template, a full example LCA report serving as inspiration for students who write their first LCA report, and a more detailed overview of existing LCIA methods and their similarities and differences.
Life Cycle Costing: An Introduction
The chapter gives an introduction to life cycle costing (LCC) and how it can be used to support decision-making. It can form the economic pillar in a full life cycle sustainability assessment, but often system delimitations differ depending on the goal and scope of the study. To provide a profound understanding this chapter describes several approaches and terms, fundamental principles and different types of costs. A brief introduction is given to conventional LCC and societal LCC but the main focus is on environmental Life Cycle Costing (eLCC) as the LCC approach that is compatible with environmental Life Cycle Assessment (LCA) in terms of system delimitation. Differences are explained and addressed, and an overview is given of the main cost categories to consider from different user perspectives. As inventory data is often sensitive in financial analyses, a list of relevant databases is provided as well as guidance on how to collect data to overcome this hurdle. In an illustrative case study on window frames, the eLCC theory is applied and demonstrated with each step along the eLCC procedure described in detail. A final section about advanced LCC introduces how to monetarise externalities and how to do discounting.

Life Cycle Impact Assessment
This chapter is dedicated to the third phase of an LCA study, the Life Cycle Impact Assessment (LCIA) where the life cycle inventory’s information on elementary flows is translated into environmental impact scores. In contrast to the three other LCA phases, LCIA is in practice largely automated by LCA software, but the underlying principles, models and factors should still be well understood by practitioners to ensure the insight that is needed for a qualified interpretation of the results. This chapter teaches the fundamentals of LCIA and opens the black box of LCIA with its characterisation models and factors to inform the reader about: (1) the main purpose and characteristics of LCIA, (2) the mandatory and optional steps of LCIA according to the ISO standard, and (3) the science and methods underlying the assessment for each environmental impact category. For each impact category, the reader is taken through (a) the underlying environmental problem, (b) the underlying environmental mechanism and its fundamental modelling principles, (c) the main anthropogenic sources causing the problem and (d) the main methods available in LCIA. An annex to this book offers a comprehensive qualitative comparison of the main elements and properties of the most widely used and also the latest LCIA methods for each impact category, to further assist the advanced practitioner to make an informed choice between LCIA methods.
Life Cycle Interpretation

The interpretation is the final phase of an LCA where the results of the other phases are considered together and analysed in the light of the uncertainties of the applied data and the assumptions that have been made and documented throughout the study. This chapter teaches how to perform an interpretation. The process of interpretation starts with identification of potentially significant issues in the previous stages of goal and scope definition, inventory analysis and impact assessment, and examples of potential significant issues are given for each phase. The significance is then determined by checking completeness, sensitivity and consistency for each of these identified issues. The outcome is used to inform previous phases on the needs for strengthening the data basis of the study, and where this is not possible to reconsider the goal and scope definition of the study. Finally, guidance is given on how to draw conclusions based on the previous steps of the interpretation, qualify the conclusions in terms of their robustness, and develop recommendations based on the results of the study.

Life Cycle Inventory Analysis

The inventory analysis is the third and often most time-consuming part of an LCA. The analysis is guided by the goal and scope definition, and its core activity is the collection and compilation of data on elementary flows from all processes in the studied product system(s) drawing on a combination of different sources. The output is a compiled inventory of elementary flows that is used as basis of the subsequent life cycle impact assessment phase. This chapter teaches how to carry out this task through six steps: (1) identifying processes for the LCI model of the product system; (2) planning and collecting data; (3) constructing and quality checking unit processes; (4) constructing LCI model and calculating LCI results; (5) preparing the basis for uncertainty management and sensitivity analysis; and (6) reporting.
Life Cycle Management

This chapter gives an overview of Life Cycle Management (LCM)—a discipline that deals with the managerial tasks related to practicing sustainable development in an organisation. Just as Life Cycle Assessment, LCM advocates the life cycle perspective, and it applies this perspective in decision-making processes. The chapter shows that LCA can play a key role in LCM since LCA provides quantitative performance measurements. It also explains, which stakeholders need to be considered, how LCA and LCM relate, how LCA can be used to develop Key Performance Indicators, and addresses how LCM can be integrated into an organisation.

Limiting Global Warming to Well Below 2 °C: Energy System Modelling and Policy Development

This book presents the energy system roadmaps necessary to limit global temperature increase to below 2°C, in order to avoid the catastrophic impacts of climate change. It provides a unique perspective on and critical understanding of the feasibility of a well-below-2°C world by exploring energy system pathways, technology innovations, behaviour change and the macro-economic impacts of achieving carbon neutrality by mid-century. The transformative changes in the energy transition are explored using energy systems models and scenario analyses that are applied to various cities, countries and at a global scale to offer scientific evidence to underpin complex policy decisions relating to climate change mitigation and interrelated issues like energy security and the energy-water nexus. It includes several chapters directly related to the Nationally Determined Contributions proposed in the context of the recent Paris Agreement on Climate Change. In summary, the book collates a range of concrete analyses at different scales from around the globe, revisiting the roles of countries, cities and local communities in pathways to significantly reduce greenhouse gas emissions and make a well-below-2°C world a reality. A valuable source of information for energy modellers in both the industry and public sectors, it provides a critical understanding of both the feasibility of roadmaps to achieve a well-below-2°C world, and the diversity and wide applications of energy systems models. Encompassing behaviour changes; technology innovations; macro-economic impacts; and other environmental challenges, such as water, it is also of interest to energy economists and
engineers, as well as economic modellers working in the field of climate change mitigation.

**General information**

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**Long-term effects of alternative deterrence policies: Panel data evidence from traffic punishments in Denmark**

This paper aims to quantify the long-term effects of alternative traffic punishments, ranging from demerit point assignment to conditional suspension of driving privileges. We employ unique longitudinal traffic offense data and exploit the introduction of a point-recording scheme in Denmark. We find that drivers who are assigned one or more demerit points reduce their frequency of traffic offenses and that these effects increase with the number of demerit points accumulated. However, these effects are short-lived, lasting only for the first two years post-reform and fading thereafter. In contrast, a stricter traffic punishment that conditionally suspends the driving license seems to have significant short-run and long-run effects. Our investigation into the types of offenses suggests that the deterrence effects are specific to the offense type for which they are imposed rather than generic improvements in driving behavior. These results imply that the effects of some of the existing traffic punishments are not only short-lived but also provide “specific deterrence”.

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Low Carbon Development Strategy (LCDS) for the Nicaraguan Livestock Sector

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Main Characteristics of LCA
Life cycle assessment (LCA) has a number of defining characteristics that enables it to address questions that no other assessment tools can address. This chapter begins by demonstrating how the use of LCA in the late 2000s led to a drastic shift in the dominant perception that biofuels were “green”, “sustainable” or “carbon neutral”, which led to a change in biofuel policies. This is followed by a grouping of the LCA characteristics into four headlines and an explanation of these: (1) takes a life cycle perspective, (2) covers a broad range of environmental issues, (3) is quantitative, (4) is based on science. From the insights of the LCA characteristics we then consider the strengths and limitations of LCA and end the chapter by listing 10 questions that LCA can answer and 3 that it cannot.
Mexico’s Transition to a Net-Zero Emissions Energy System: Near Term Implications of Long Term Stringent Climate Targets

Mexico has positioned itself as a leader among emerging countries for its efforts to mitigate climate change through ambitious climate policies aimed at reducing greenhouse gas (GHG) emissions. However, the Energy Reform bill approved in 2014 promotes the production of hydrocarbons to develop the economy of this sector, as well as the use of natural gas for electricity generation in order to reduce electricity prices in the short term. In 2016, nearly 80% of Mexico’s total electricity was generated by thermal power plants. While natural gas prices stay low, there might be a limited role for natural gas to act as a fuel bridge in this sector if the government is to pursue deep decarbonisation targets to 2050. There is a risk that over-investing in gas infrastructure may delay a transition to lower carbon sources, potentially leading to less cost-efficient pathways towards decarbonisation. This analysis is based on three decarbonisation scenarios that have been modelled using an energy system optimisation model soft-linked to a power systems model. Our results suggest that a deep decarbonisation of the power system is techno-economically feasible and cost-optimal through renewables (mainly solar PV and wind); also, that decarbonisation paths post-2030 are largely dependent on the investment decisions made in the 2020s. It is therefore essential that Mexico’s energy planning decision-makers avoid a natural gas “lock-in” that would either cause carbon targets to be missed or risk leaving some natural gas infrastructure stranded.

General information
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Mixed Integer Linear Programming for new trends in wind farm cable routing

The efficient production of green energy plays a major role in modern economies. In this paper we address the optimization of cable connections between turbines in an offshore wind park. Different versions of this problem have been studied recently. In a previous joint project with Vattenfall BA Wind (a global leader in energy production) we have studied and modeled the main constraints arising in practical cases. Building on that model, in the present paper we address new features that have been recently proposed by Vattenfall's experts. Turbines are becoming still more customized, therefore it is important to be able to evaluate the impact of new technologies with a flexible optimization tool. We here show how some new features can effectively be modeled and solved using a Mixed-Integer Linear Programming paradigm. Computational results on a real-world case are briefly presented.
Model-Based Systems Engineering for Life-Sciences Instrumentation Development

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Scopus rating (2011): SJR 0.514 SNIP 2.486 CiteScore 1.07
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Scopus rating (2005): SJR 0.246 SNIP 0.953
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Modeling ecotoxicity impacts in vineyard production: Addressing spatial differentiation for copper fungicides

Application of plant protection products (PPP) is a fundamental practice for viticulture. Life Cycle Assessment (LCA) has proved to be a useful tool to assess the environmental performance of agricultural production, where including toxicity-related impacts for PPP use is still associated with methodological limitations, especially for inorganic (i.e. metal-based) pesticides. Downy mildew is one of the most severe diseases for vineyard production. For disease control, copper-based fungicides are the most effective and used PPP in both conventional and organic viticulture. This study aims to improve the toxicity-related characterization of copper-based fungicides (Cu) for LCA studies. Potential freshwater ecotoxicity impacts of 12 active ingredients used to control downy mildew in European vineyards were quantified and compared. Soil ecotoxicity impacts were calculated for specific soil chemistries and textures. To introduce spatial differentiation for Cu in freshwater and soil ecotoxicity characterization, we used 7 European water archetypes and a set of 15,034 non-calcareous vineyard soils for 4 agricultural scenarios. Cu ranked as the most impacting substance for potential freshwater ecotoxicity among the 12 studied active ingredients. With the inclusion of spatial differentiation, Cu toxicity potentials vary 3 orders of magnitude, making variation according to water archetypes potentially relevant. In the case of non-calcareous soils ecotoxicity characterization, the variability of Cu impacts in different receiving environments is about 2 orders of magnitude. Our results show that Cu potential toxicity depends mainly on its capacity to interact with the emission site, and the dynamics of this interaction (speciation). These results represent a better approximation to understand Cu potential toxicity impact profiles, assisting decision makers to better understand copper behavior concerning the receiving environment and therefore how restrictions on the use of copper-based fungicides should be considered in relation to the emission site.

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Modelling smart energy systems in tropical regions

A large majority of energy systems models of smart urban energy systems are modelling moderate climate with seasonal variations, such as the European ones. The climate in the tropical region is dominated by very high stable temperatures and high humidity and lacks the moderate climate's seasonality. Furthermore, the smart energy system models tend to focus on CO$_2$ emissions only and lack integrated air pollution modelling of other air pollutants. In this study, an integrated urban energy system for a tropical climate was modelled, including modelling the interactions between power, cooling, gas, mobility and water desalination sectors. Five different large scale storages were modelled, too. The developed linear optimization model further included endogenous decisions about the share of district versus individual cooling, implementation of energy efficiency solutions and implementation of demand response measures in buildings and industry. Six scenarios for the year 2030 were developed in order to present a stepwise increase in energy system integration in a transition to a smart urban energy system in Singapore. The economically best performing scenario had 48% lower socio-economic costs, 68% lower CO$_2$e emissions, 15% higher particulate matter emissions and 2% larger primary energy consumption compared to a business-as-usual case.
Multi-scale spatial modeling of human exposure from local sources to global intake

Exposure studies, used in human health risk and impact assessments of chemicals are largely performed locally or regionally. It is usually not known how global impacts resulting from exposure to point source emissions compare to local impacts. To address this problem, we introduce Pangea, an innovative multi-scale, spatial multimedia fate and exposure assessment model. We study local to global population exposure associated with emissions from 126 point sources matching locations of waste-to-energy plants across France. Results for three chemicals with distinct physicochemical properties are expressed as the evolution of the population intake fraction through inhalation and ingestion as a function of the distance from sources. For substances with atmospheric half-lives longer than a week, less than 20% of the global population intake through inhalation (median of 126 emission scenarios) can occur within a 100 km radius from the source. This suggests that, by neglecting distant low-level exposure, local assessments might only account for fractions of global cumulative intakes. We also study ~10,000 emission locations covering France more densely to determine per chemical and exposure route which locations minimize global intakes. Maps of global intake fractions associated with each emission location show clear patterns associated with population and agriculture production densities.
Nama for a Low Carbon and Climate Resilient Livestock Sector in Honduras

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, Tropical Agricultural Centre for Research and Higher Education (CATIE) (CR), Universidad del Tolima
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Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: Hunduras_Livestock_update_2.pdf

Bibliographical note
NAMA para un sector ganadero bajo en carbono y resiliente al Clima en Honduras

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State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, Tropical Agricultural Centre for Research and Higher Education (CATIE) (CR), Universidad del Tolima
Number of pages: 104
Publication date: 2018

Networked capabilities for sustainable energy solutions

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology
Authors: Parraguez Ruiz, P. (Intern), Maier, A. (Intern)
Pages: 29-35
Publication date: 2018

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Chapter: 4
Main Research Area: Technical/natural sciences
Electronic versions:
Publication: Research - peer-review › Report chapter – Annual report year: 2018

Next generation interactive tool as a backbone for universal access to electricity

Energy planning in rural areas and in developing countries most often relies on the outputs of specialised analytical tools, of which only a handful have been developed. Over the years these tools have been upgraded, and the newest among them take into consideration, to a greater or lesser extent, all key determinants of energy generation and distribution. This paper focuses on a "pool" of web-based geo-referencing open-source tools and highlights the extent to which each analytical tool reflects the particularities of the various determinants of energy generation and distribution. In doing so, the present work identifies aspects of the tools that need to be strengthened. Building on this information, the paper further maps the suitability of each tool with regard to calculating (at a local level) the six Sustainable Development Goal indicators that are closely related to energy. This makes it possible to draw conclusions about monitoring needs in study-areas. Bringing together these two sets of findings, the paper concludes with a research agenda for analytical tool development in the area of energy planning, which spills over developmental agendas.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, UNEP DTU Partnership, United Nations Environmental Programme
Authors: Moner-Girona, M. (Ekstern), Puig, D. (Intern), Mulugetta, Y. (Ekstern), Kougias, I. (Ekstern), AbdulRahman, J. (Ekstern), Szabo, S. (Ekstern)
Publication date: 2018
Main Research Area: Technical/natural sciences
Several studies have shown that lipid oxidation can occur in topical skin formulations, but the impact of the individual volatile compounds on off-odour has not yet been determined. In this study, lipid oxidation was investigated in prototype skin care formulations. Firstly, lipid oxidation volatile compounds that increased in concentration during storage were identified. The results showed that the concentration of six volatile compounds increased above previously reported odour detection threshold values in water. These volatile compounds were selected for odour detection threshold value determination and also odour description by a trained sensory panel.

In one case, the odour detection threshold value was 50 times higher (less detectable) in skin care products than in water, whereas for other volatile compounds the odour detection threshold value was only 1.5 times higher. The odour description of the volatile compounds was, in most cases, different from that reported in literature. The observed differences are hypothesised to be due to a masking effect of the base odour of the skin care product(s), a volatile-retaining power of the base matrix and to a cocktail effect of the combined odours from different volatile oxidation products.

Practical applications: In this study, the impact of volatile compounds on off-odour was explored in prototype skin care formulations. The odour detection threshold value and odour description were determined for butanal, pentanal, 3-methyl-1-butanol, 2-ethyl furan, 2-pentyl furan and 1-heptanol in prototype skin care formulations.
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Original language: English
DOIs:
10.1002/ejlt.201700231
Source: Findit
Source-ID: 2396886554
Publication: Research - peer-review > Journal article – Annual report year: 2018
Offering Strategy of a Flexibility Aggregator in a Balancing Market Using Asymmetric Block Offers

In order to enable large-scale penetration of renewables with variable generation, new sources of flexibility have to be exploited in the power systems. Allowing asymmetric block offers (including response and rebound blocks) in balancing markets can facilitate the participation of flexibility aggregators and unlock load-shifting flexibility from, e.g., thermostatic loads. In this paper, we formulate an optimal offering strategy for a risk-averse flexibility aggregator participating in such a market. Using a price-taker approach, load flexibility characteristics and balancing market price forecast scenarios are used to find optimal load-shifting offers under uncertainty. The problem is formulated as a stochastic mixed-integer linear program and can be solved with reasonable computational time. This work is taking place in the framework of the real-life demonstration project EcoGrid 2.0, which includes the operation of a balancing market on the island of Bornholm, Denmark. In this context, aggregators will participate in the market by applying the offering strategy optimization tool presented in this paper.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Systems Analysis, Department of Electrical Engineering, Center for Electric Power and Energy, Energy Analytics and Markets, ETH Zurich, Technical University of Munich
Authors: Bobo, L. A. (Intern), Delikaraoglou, S. (Ekstern), Vespermann, N. (Ekstern), Kazempour, J. (Intern), Pinson, P. (Intern)
Number of pages: 7
Publication date: 2018

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Title of host publication: Proceedings of 2018 Power Systems Computation Conference
Publisher: IEEE
Main Research Area: Technical/natural sciences
Conference: 20th Power System Computation Conference, Dublin, Ireland, 11/06/2018 - 11/06/2018
Flexibility aggregator, Asymmetric block offers, Balancing market, Load Shifting, Offering strategy, Risk
Source: PublicationPreSubmission
Source-ID: 146429766
Publication: Research - peer-review › Article in proceedings – Annual report year: 2018

Off-grid access to electricity innovation challenge

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, The Energy and Resources Institute (TERI)
Authors: Nygaard, I. (Intern), Hansen, U. E. (Intern), Larsen, T. H. (Intern), Palit, D. (Ekstern), Muchunko, C. (Ekstern)
Pages: 47-54
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Publisher: Technical University of Denmark (DTU)
ISBN (Electronic): 978-87-93458-57-4
Chapter: 6
Main Research Area: Technical/natural sciences
Electronic versions:
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On a true value of risk

The paper suggests looking on probabilistic risk quantities and concepts through the prism of accepting one of the views: whether a true value of risk exists or not. It is argued that discussions until now have been primarily focused on closely related topics that are different from the topic of the current paper. The paper examines operational consequences of adhering to each of the views and contrasts them. It is demonstrated that operational differences on how and what probabilistic measures can be assessed and how they can be interpreted appear tangible. In particular, this concerns prediction intervals, the use of Byes rule, models of complete ignorance, hierarchical models of uncertainty, assignment of probabilities over possibility space and interpretation of derived probabilistic measures. Behavioural implications of favouring the either view are also briefly described.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems
On sceptics and enthusiasts: What are the expectations towards self-driving cars?

Automation in transport is increasing rapidly. While it is assumed that automated driving will have a significant impact on travel demand, the nature of this impact is not clear yet. Based on an online survey (N=3040), this study explores the expected consequences of automated driving in the Danish population. Participants were divided into three homogeneous segments based on attitudes towards automated and conventional car driving: Sceptics (38%); Indifferent stressed drivers (37%) and Enthusiasts (25%). The attitudinal segments differ in their socio-demographic profiles, current travel behaviour, interest in use-cases for self-driving cars, and anticipated changes of behaviour in a future with self-driving cars. People who are enthusiastic about self-driving cars are typically male, young, highly educated, and live in large urban areas, while Sceptics are older, car reliant and more often live in less densely populated areas. The indifferent group consists of more car reluctant people. The expected advantages of self-driving cars generally resemble the aspects highlighted in other studies, such as relief from driving tasks and the possibility of doing other things while travelling, with some variation between the three segments. Preferred future scenarios include car ownership rather than sharing solutions as well as residential relocation, which is considered by 22% of all participants as a consequence of the possibility of working in the car (13% of Sceptics; 28% of Enthusiasts). All in all, increased travel demand can be expected from an uptake of increasingly automated cars, which will be realised in the different segments with different speeds, depending on policies, business models, and proven functionality and safety.
Opening the black box of energy modelling: Strategies and lessons learned

The global energy system is undergoing a major transition, and in energy planning and decision-making across governments, industry and academia, models play a crucial role. Because of their policy relevance and contested nature, the transparency and open availability of energy models and data are of particular importance. Here we provide a practical how-to guide based on the collective experience of members of the Open Energy Modelling Initiative (Openmod). We discuss key steps to consider when opening code and data, including determining intellectual property ownership, choosing a licence and appropriate modelling languages, distributing code and data, and providing support and building communities. After illustrating these decisions with examples and lessons learned from the community, we conclude that even though individual researchers’ choices are important, institutional changes are still also necessary for more openness and transparency in energy research.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, International Institute for Applied Systems Analysis, Forschungszentrum Jülich GmbH, Imperial College London, Energy Consultant, German Aerospace Center, KTH - Royal Institute of Technology, ETH Zurich, University of Basel, Mercator Research Institute on Global Commons and Climate Change (MCC), University of Cambridge, Frankfurt University, University of Groningen, University of Flensburg, Reiner-Lemoine-Institut gGmbH, German Institute for Economic Research, Potsdam Institute for Climate Impact Research, DLR Institute of Networked Energy Systems, Wuppertal Institute for Climate, Environment and Energy
Number of pages: 9
Pages: 63-71
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Main Research Area: Technical/natural sciences

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Journal: Energy Strategy Reviews
Volume: 19
ISSN (Print): 2211-467X
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Many EU countries aim at reducing fossil fuels in the near future, hence an efficient production of green energy is very important to reach this goal. In this article, we address the optimization of cable connections between turbines in an offshore wind park. Different versions of the problem have been studied in the recent literature. As turbines are becoming still more customized, it is important to be able to evaluate the impact of new technologies with a flexible optimization tool for scenario evaluation. In a previous joint project with Vattenfall BA Wind (a global leader in energy production) we have studied and modeled the main constraints arising in practical cases. Building on that model, in the present article, we address new technological features that have been recently proposed by Vattenfall's experts. We show how some new features can be modeled and solved using a Mixed-Integer Linear Programming paradigm. We report and discuss computational results on the performance of our new models on a set of real-world instances provided by Vattenfall.
Out-of-Home Mobility of Senior Citizens in Kochi, India
The rapidly growing number of senior citizens in Indian cities, changing demographic structure and deteriorating transport infrastructure has raised concerns about mobility and independence of seniors. This article explores these issues, using semi-structured interviews in the city of Kochi, Kerala. The study finds that the provision of mobility infrastructure and the situation of seniors have restricted their mobility to the extent that many seniors prefer not to travel, pushing seniors towards living a dependent life. However, the changing social structure will force them to live an independent life, which will put a lot of pressure on their well-being. It is imperative that there is systemic support, and mobility options are provided such that seniors are able to move freely.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, UNEP DTU Partnership, Urban Mass Transit Company (UMTC), University of Pennsylvania
Authors: Munshi, T. (Intern), Sankar, M. (Ekstern), Kothari, D. (Ekstern)
Number of pages: 18
Pages: 153-170
Publication date: 2018

Host publication information
Title of host publication: Geographies of Transport and Ageing
Publisher: Springer
Editors: A. C., C. M.
Main Research Area: Technical/natural sciences
DOIs:
10.1007/978-3-319-76360-6_7
Output variability caused by random seeds in a multi-agent transport simulation model

Dynamic transport simulators are intended to support decision makers in transport-related issues, and as such it is valuable that the random variability of their outputs is as small as possible. In this study we analyse the output variability caused by random seeds of a multi-agent transport simulator (MATSim) when applied to a case study of Santiago de Chile. Results based on 100 different random seeds shows that the relative accuracies of estimated link loads tend to increase with link load, but that relative errors of up to 10 % do occur even for links with large volumes. Although the proportion of links having large relative errors is roughly the same for all of the investigated seeds, it is shown that the variations of individual link loads between seeds largely dominate variations between the two last iterations within a seed.

General information
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Organisations: Department of Management Engineering, Transport DTU, Transport Modelling
Authors: Paulsen, M. (Intern), Rasmussen, T. K. (Intern), Nielsen, O. A. (Intern)
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Conference: The 9th International Conference on Ambient Systems, Networks and Technologies , Porto, Portugal, 08/05/2018 - 08/05/2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Procedia Computer Science
Volume: 130
ISSN (Print): 1877-0509
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.88 SJR 0.267 SNIP 0.705
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.275 SNIP 0.825 CiteScore 0.85
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.258 SNIP 0.781 CiteScore 0.67
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.243 SNIP 0.609 CiteScore 0.64
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.527 SNIP 1.077 CiteScore 0.63
ISI indexed (2012): ISI indexed yes
Scopus rating (2011): SJR 0.172 SNIP 0.731 CiteScore 0.55
ISI indexed (2011): ISI indexed no
Original language: English
Electronic versions:
OutputVariabilityCausedByRandomSeedsInAMultiAgentTransportSimulationModel.pdf
DOIs:
10.1016/j.procs.2018.04.078
Source: PublicationPreSubmission
Source-ID: 146792436
Publication: Research - peer-review » Conference article – Annual report year: 2018

Overview of Existing LCIA Methods—Annex to Chapter 10
The chapter gives an overview and a systematic comparison of a selection of the most used Life Cycle Impact Assessment (LCIA) methods, focusing on methods that have been implemented and made available in LCA software. Currently available midpoint and endpoint characterisation methodologies are presented and their specific properties are qualitatively compared in detailed tables.
Passenger arrival and waiting time distributions dependent on train service frequency and station characteristics: A smart card data analysis

Waiting time at public transport stops is perceived by passengers to be more onerous than in-vehicle time, hence it strongly influences the attractiveness and use of public transport. Transport models traditionally assume that average waiting times are half the service headway by assuming random passenger arrivals. However, research agree that two distinct passenger behaviour types exist: one group arrives randomly, whereas another group actively tries to minimise their waiting time by arriving in a timely manner at the scheduled departure time. This study proposes a general framework for estimating passenger waiting times which incorporates the arrival patterns of these two groups explicitly, namely by using a mixture distribution consisting of a uniform and a beta distribution. The framework is empirically validated using a large-scale automatic fare collection system from the Greater Copenhagen Area covering metro, suburban, and regional rail stations thereby giving a range of service headways from 2 to 60 min. It was shown that the proposed mixture distribution is superior to other distributions proposed in the literature. This can improve waiting time estimations in public transport models. The results show that even at 5-min headways 43% of passengers arrive in a timely manner to stations when timetables are available. The results bear important policy implications in terms of providing actual timetables, even at high service frequencies, in order for passengers to be able to minimise their waiting times.
Physical activity monitors to enhance the daily amount of physical activity in elderly—a protocol for a systematic review and meta-analysis

To investigate the use of physical activity monitors (PAMs) for the elderly, the scientific literature should be systematically reviewed and the effect quantified, as the evidence seems inconclusive. Randomized controlled trials and randomized crossover trials, with participants with a mean age above 65 years, comparing any PAM intervention with other control interventions or no intervention, will be included. This protocol is detailed according to the recommendations of the Cochrane Handbook, and it is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols statement. We will present results from the search in a flow diagram. The results from the analyses will include regular meta-analyses, stratified analyses, and meta-regressions. The results on each outcome of interest will be presented in a summary of findings table. This paper will explore and analyze the heterogeneity of the results and try to identify variables that will enhance the effect of PAMs in elderly. The results will be useful to researchers working with elderly and/or PAMs, health care professionals working with elderly, and relatives together with the elderly themselves. PROSPERO CRD42018083648.

General information

State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, University of Copenhagen, University of Southern Denmark
Authors: Larsen, R. T. (Ekstern), Christensen, J. (Ekstern), Juhl, C. B. (Ekstern), Andersen, H. B. (Intern), Langberg, H. (Ekstern)
Number of pages: 7
Publication date: 2018
Policy incentives for flexible district heating in the Baltic countries

This study analyzes the impacts of taxes, subsidies, and electricity transmission and distribution tariffs and heat storage on the operation and economic feasibility of district heating plants with different flexibility potentials in the Baltic countries. Under 2016 conditions, the lowest levelized cost of heat is achieved by a combination of wood chip boilers, electric boilers, and heat storage. Heat storage enables a higher utilization of least-cost technologies, resulting in greater cost efficiency for all considered scenarios. Current taxes and subsidies are found to have limited impact on the operation of combined heat and power plants and electric boilers.

General information

State: Published
Organisations: Department of Management Engineering, Systems Analysis, Norwegian University of Life Sciences, Tallinn University of Technology, Riga Technical University
Authors: Sneum, D. M. (Intern), Sandberg, E. (Ekstern), Koduvere, H. (Ekstern), Olsen, O. J. (Intern), Blumberga, D. (Ekstern)
Pages: 61-72
Publication date: 2018
Main Research Area: Technical/natural sciences

Journal: Utilities Policy
Volume: 51
ISSN (Print): 0957-1787
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.77 SJR 0.801 SNIP 1.152
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.531 SNIP 1.026 CiteScore 1.59
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.509 SNIP 0.929 CiteScore 1.23
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.515 SNIP 1.036 CiteScore 1.29
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.916 SNIP 1.286 CiteScore 1.29
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.851 SNIP 1.219 CiteScore 1.24
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
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Scopus rating (2009): SJR 0.63 SNIP 1.121
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.766 SNIP 1.691
Scopus rating (2007): SJR 0.318 SNIP 0.909
Scopus rating (2006): SJR 0.421 SNIP 1.116
Scopus rating (2005): SJR 0.229 SNIP 0.545
Scopus rating (2004): SJR 0.263 SNIP 0.701
Scopus rating (2003): SJR 0.264 SNIP 1.014
Scopus rating (2002): SJR 0.154 SNIP 0.303
Scopus rating (2001): SJR 0.456 SNIP 0.594
Scopus rating (2000): SJR 0.421 SNIP 0.494
Scopus rating (1999): SJR 0.256 SNIP 1.181
Original language: English
District heating, Flexibility, Energy policy
DOIs: 10.1016/j.jup.2018.02.001

Relations
Activities:
Norwegian University of Life Sciences
Source: FindIt
Source-ID: 2397697040
Publication: Research - peer-review › Journal article – Annual report year: 2018

Project studies: What it is, where it is going
Project organising is a growing field of scholarly inquiry and management practice. In recent years, two important developments have influenced this field: (1) the study and practice of projects have extended their level of analysis from mainly focussing on individual projects to focussing on micro- as well as macro-level concerns around projects; and (2) there has been a greater interest in different kinds of scholarly inquiry. Taken together, these two developments call for closer scrutiny of how the levels of analysis and the types of inquiry are related and benefit each other, and of the explanations of project practices they could offer. To discuss avenues for future research on projects and project practice, this paper suggests the notion of project studies to better grasp the status of our field. We combine these two sets of ideas to analyse the status and future options for advancing project research: (1) levels of analysis; and (2) type of research. Analysing recent developments within project studies, we observe the emergence of what we refer to as type 3 research, which reconciles the need for theoretical development and engagement with practice. Type 3 research suggests pragmatic avenues to move away from accepted yet unhelpful assumptions about projects and project organising. The paper ends with an agenda for future research, which offers project scholars a variety of options to position themselves in the field of project studies, and to explore opportunities in the crossroads between levels of analysis and types of research. Executive summary: Rapid diversification of scholarly inquiry and management practice in projects may segregate the project research, but could also constitute an opportunity to strengthening it. For example, the diversity of ‘organisations’ or forms of ‘organising’ filled the field of organisation studies with new ideas and intellectual challenges. To take advantage of such developments, organisational scholars had to consider different forms of organising as part of
'organisation studies', and continuously adapt their frames of reference and forms of conceptualising organisations as a 'research field' and a 'research object'. Concomitantly, they embraced alternative research interests, ontologies and epistemologies, which today enrich the field. Such dynamics build on scholarly reflexivity and could also, we believe, be fostered in project research. Thus, responding to the diversification of the field, and inspired by the notion of 'organisation studies', we present the case of 'project studies', which acts as an umbrella for the studies in, on and around projects. 'Project studies' is novel as it does not propose an alternative perspective on projects, but instead calls for an inclusive and integrative research field for all perspectives, fostering vibrant dialogue and debate that welcomes different opinions and perspectives. The aim of the present paper is to demonstrate the value of the notion of project studies and to call for reflexive scholars capable of navigating diversity by positioning their research in contrast with that of others. In particular, we focus on two recent developments that have contributed to the diversification of the field and offered new options for project scholars: (1) the study and practice of projects have extended their level of analysis from mainly focussing on individual projects to focussing on micro- as well as macro-level concerns around projects; and (2) there has been a greater interest in different kinds of scholarly inquiry. We examined the different types of inquiries through the lenses of the three deep-seeded human interests proposed by Habermas: a) The traditional positivist tradition has its main interest on 'solving the problems' of project organising and increase its efficiency and effectiveness through better understanding of causal relationships surrounding projects. b) Interpretative research is grounded on our inherent interest to understand the world around us, but not necessarily 'solve' it. Rather, this research explores perceptions, behaviours and sees the world not so much in terms of causal-links, but complex networks with interesting cases and possibilities for learning. c) Emancipatory research is driven by emancipatory interest and the pragmatic desire for changes in the status quo through the reorganisation of inherent contradictions, giving voice to minorities while addressing major economic and social problems. We termed them type 1, type 2 and type 3, respectively. The juxtaposition of levels of analysis and types of research offers a matrix with nine areas to identify opportunities and to position research contributions in the field of project studies, extending current treatments of problems and topics to different levels of analysis and types of research. In particular, we would also welcome the strengthening of type 3 research across the three primary levels of analysis addressed in the present paper. This paper provides a framework to encourage project scholars to reflect and become even more aware of nature and conduct of their research: the kinds of knowledge and interests they pursue, as well as the focus of their research. Our framework and analysis are exploratory and only build a tentative foundation for further exploration. We hope the present paper will trigger reflexivity on the making of project studies. In this spirit, we welcome further development as well as criticism to our main ideas.
Promoting private sector engagement in climate change adaptation and flood resilience: A case study of innovative approaches applied by MSMEs in Mumbai, India.

Recurring heavy precipitation and flooding cause extensive loss and damage in cities like Mumbai. Among the worst affected are Micro Small and Medium Enterprises (MSMEs) which suffer damage to physical structure and loss of business. These costs amount to millions of dollars and are borne by MSMEs in the absence of adequate insurance protection. With limited flood management services and inadequate infrastructure provided by the municipal authorities, MSMEs are implementing their own temporary measures for flood protection. These are often ineffective during heavy precipitation and create risks of maladaptation. As climate change is expected to worsen the risk of flash floods with changes in intensity, frequency and duration of rainfall, MSMEs need long-term solutions to build their adaptive capacity and resilience. This paper describes the business case for private sector engagement in flood risk reduction and climate adaptation from the perspective of MSMEs in Mumbai. Based on extensive field surveys of MSMEs located in industrial estates, the paper discusses the implications of floods for MSMEs. Moreover, the authors present a framework developed for MSMEs to make informed risk reduction and adaptation decisions and implement effective structural and non-structural measures to minimize the recurring adverse impacts of floods on their business operations.
Reaching carbon neutral transport sector in Denmark - Evidence from the incorporation of modal shift into the TIMES energy system modeling framework

Energy/Economy/Environment/Engineering (E4) models have been rarely apt to represent human behaviour in transportation mode adoption. This paper contributes to the scientific literature by using an E4 model to analyse the long-term decarbonisation of the Danish transport sector. The study is carried out with TIMES-DK, the integrated energy system model of Denmark, which has been expanded in order to endogenously determine modal shares. The methodology extends the technology competition within the modes to competition across modes by aggregating the passenger modal travel demands into demand segments based on the distance range. Modal shift is based not only on the levelised costs of the modes, but also on speed and infrastructure requirement. Constraints derived from the National Travel Survey guarantee consistent travel habits and avoid unrealistic modal shifts. The comparison of model versions with and without modal shift identifies its positive contribution to the fulfilment of the Danish environmental targets. Four sensitivity analyses on the key variables of modal shift assess how their alternative realizations affect the decarbonisation of the transport sector and enable shifting away from car. The results indicate that less strict travel time budget (TTB) and increased speed of public bus lead to a more efficient decarbonisation by 2050.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Tattini, J. (Intern), Gargiulo, M. (Ekstern), Karlsson, K. B. (Intern)
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BFI (2018): BFI-level 2
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BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.49 SJR 2.197 SNIP 1.959
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.325 SNIP 1.768 CiteScore 3.98
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.193 SNIP 1.93 CiteScore 3.62
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.949 SNIP 2.192 CiteScore 3.74
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.789 SNIP 2.057 CiteScore 3.52
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.603 SNIP 1.917 CiteScore 3.35
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.486 SNIP 1.852
Web of Science (2010): Indexed yes
Recycling processes and quality of secondary materials: Food for thought for waste-management-oriented life cycle assessment studies

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Politecnico di Milano, ETH Zurich, Finnish Environment Institute
Authors: Rigamonti, L. (Ekstern), Niero, M. (Intern), Haupt, M. (Ekstern), Grosso, M. (Ekstern), Judl, J. (Ekstern)
Publication date: 2018
Main Research Area: Technical/natural sciences

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BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4 SJR 1.354 SNIP 2.044
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.739 SNIP 2.256 CiteScore 4.33
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Renewable electrification and local capability formation: Linkages and interactive learning

This paper discusses the prospects for developing production and innovation capabilities arising from renewable electrification efforts. This discussion falls at the intersection of several literatures within innovation studies and development studies. It requires a combination of ideas from across several academic fields of study. This paper focuses on value chain linkages and interactive learning. Because this is largely unexplored terrain, the paper seeks to provide conceptual framing based on insights from the literature and it discusses whether linkages within the global South offer specific advantages over North–South linkages. It then uses this conceptual framing to draw insights from the case of renewable electrification with wind and solar PV in Kenya. It ends by identifying key avenues for promoting interactive learning in this context.

General information
Report Template
To ensure consistent reporting of life cycle assessment (LCA), we provide a report template. The report includes elements of an LCA study as recommended but the ILCD Handbook. Illustrative case study reported according to this template is presented in Chap. 39.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Transport DTU
Authors: Bjørn, A. (Intern), Laurent, A. (Intern), Owsianiak, M. (Intern)
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Source-ID: 2373522939
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Risiko i trafikken 2007-2016

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Organisations: Department of Management Engineering, Transport DTU
Authors: Christiansen, H. (Intern), Warnecke, M. (Intern)
Number of pages: 63
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Risiko_i_trafikken_2007_16.pdf
Source: PublicationPreSubmission
Source-ID: 144611056
Publication: Research › Report – Annual report year: 2018
Scope Definition

The scope definition is the second phase of an LCA. It determines what product systems are to be assessed and how this assessment should take place. This chapter teaches how to perform a scope definition. First, important terminology and key concepts of LCA are introduced. Then, the nine items making up a scope definition are elaborately explained: (1) Deliverables. (2) Object of assessment, (3) LCI modelling framework and handling of multifunctional processes, (4) System boundaries and completeness requirements, (5) Representativeness of LCI data, (6) Preparing the basis for the impact assessment, (7) Special requirements for system comparisons, (8) Critical review needs and (9) Planning reporting of results. The instructions relate both to the performance and reporting of a scope definition and are largely based on ILCD.

General information
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Sensitivity-based research prioritization through stochastic characterization modeling

Product developers using life cycle toxicity characterization models to understand the potential impacts of chemical emissions face serious challenges related to large data demands and high input data uncertainty. This motivates greater focus on model sensitivity toward input parameter variability to guide research efforts in data refinement and design of experiments for existing and emerging chemicals alike. This study presents a sensitivity-based approach for estimating toxicity characterization factors given high input data uncertainty and using the results to prioritize data collection according to parameter influence on characterization factors (CFs). Proof of concept is illustrated with the UNEP-SETAC scientific consensus model USEtox.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, National Academies of Sciences, Engineering, and Medicine, Leiden University, School of Sustainable Engineering and the Built Environment
Authors: Wender, B. A. (Ekstern), Prado-Lopez, V. (Ekstern), Fantke, P. (Intern), Ravikumar, D. (Ekstern), Seager, T. P. (Ekstern)
Pages: 324-332
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Issue number: 2
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.43 SJR 1.328 SNIP 1.423
Web of Science (2016): Indexed yes
An expansion of the LCA framework has been going on through the development of ‘social life cycle assessment’—S-LCA. The methodology, still in its infancy, has the goal of assessing social impacts related to a product’s life cycle. This chapter introduces S-LCA framework area and the related challenges. It outlines the main conceptual differences between LCA and S-LCA and discusses the barriers in terms of methodological development and potential application. Three case studies are presented applying S-LCA in different contexts and using varying methods. In the light of the outlined
differences, perspectives for the future development of S-LCA are discussed.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Technical University of Denmark
Authors: Moltesen, A. (Ekstern), Bonou, A. (Intern), Wangel, A. (Intern), Bozhilova-Kisheva, K. P. (Intern)
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Social network analysis in future transportation systems: Contributions on observability, behaviour and structure

General information
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Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Technical University of Munich, University of Cyprus
Authors: Pereira, F. C. (Intern), Antoniou, C. (Ekstern), Dimitriou, L. (Ekstern)
Number of pages: 2
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BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.43 SJR 1.935 SNIP 2.531
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.941 SNIP 2.678 CiteScore 4.23
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.046 SNIP 3.228 CiteScore 3.84
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.847 SNIP 3.673 CiteScore 4.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.585 SNIP 2.782 CiteScore 2.76
ISI indexed (2012): ISI indexed yes
Spatiotemporal and economic analysis of industrial excess heat as a resource for district heating

Industrial excess heat may often be utilised for district heating and thus replace existing expensive or CO₂-emitting technologies. Previous works analysed the distribution of excess heat by temperature intervals and their geographical distribution relative to district heating areas. A more detailed analysis of the most suitable types of industries and the costs is required, allowing a targeted exploitation of this resource. This work extends the spatial and thermodynamic analysis, to account for the temporal match between industrial excess heat and district heating demands, as well as the costs for implementation and operation of the systems. This allows the determination of cost-effective district heating potentials, as well as the analysis of different industries and technological requirements. The results show that the temporal mismatch between excess heat and district heating demand and lack of demand, reduces the theoretical substitution potential by almost 30%. If heat storages are introduced, the total potential is reduced by only 10%. A majority of the excess heat can be utilised at socio-economic heating costs lower than the average Danish district heating price and the cost of solar district heating. Excess heat from oil refineries, building material and food production can be utilised at the lowest specific costs.

General information
State: Published
Organisations: Department of Mechanical Engineering, Thermal Energy, Department of Management Engineering, Systems Analysis, Viegand Maagøe A/S
Authors: Bühler, F. (Intern), Petrović, S. (Intern), Holm, F. M. (Ekstern), Karlsson, K. (Intern), Elmegaard, B. (Intern)
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Journal: Energy
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BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
Supply chain collaboration in industrial symbiosis networks

A strategy supporting the development towards a circular economy is industrial symbiosis (IS). It is a form of collaborative supply chain management aiming to make industry more sustainable and achieve collective benefits based on utilization of waste, by-products, and excess utilities between economically independent industries. Based on an extensive analysis of published studies on existing IS collaborations and interviews with central stakeholders of a comprehensive IS, this
paper investigates IS from a supply chain collaboration perspective. A theoretical framework is built and used to discuss how industrial symbiosis pursues sustainability and to identify the main collaboration aspects and performance impacts. This framework is then used in the analysis of selected published cases. Based on this, we derive propositions on the organizational and operational requirements for collaboration in the context of IS networks, related to the supply chain integration and coordination practices. As IS has only received little attention in the operations and supply chain management community, our propositions directly lead to future research directions. Furthermore, the analysis in this paper provides directions to increase the feasibility and resource efficiency of IS networks and can hence be used by stakeholders involved in these networks.

**General information**

State: Published
Organisations: Department of Management Engineering, Management Science, Quantitative Sustainability Assessment, Wageningen University
Authors: Herczeg, G. (Intern), Akkerman, R. (Ekstern), Hauschild, M. Z. (Intern)
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BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.83 SJR 1.615 SNIP 2.382
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.609 SNIP 2.383 CiteScore 5.57
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.706 SNIP 2.328 CiteScore 4.07
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.461 SNIP 1.825 CiteScore 3.19
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.419 SNIP 1.742
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.942 SNIP 1.544
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.813 SNIP 1.354
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.942 SNIP 1.489
Web of Science (2007): Indexed yes
Sustainability transitions in developing countries: Stocktaking, new contributions and a research agenda

An increasing number of studies have analysed the scope for, and the barriers to, transitions toward sustainability in the context of developing countries building on analytical perspectives from the sustainability transitions literature. This paper introduces a special issue on sustainability transitions in developing countries, which takes stock of this emerging field of research and presents new empirical research that contributes to further advancement of our understanding of the conditions in which sustainability transitions are likely to take place in developing countries and what is involved in these transformative processes. This introductory paper presents the five papers contained in the special issue. The first paper comprises a review of the existing literature on the subject, and the other four papers present new empirical research. The key findings of the papers are discussed in relation to previous research in the field specifically related to four crosscutting themes: (i) global-local linkages and external dependencies; (ii) stability and non-stability of regimes; (iii) undemocratic and non-egalitarian nature of regimes; and (iv) nurturing the development of niches versus the execution of individual projects. The introductory paper concludes by presenting a research agenda, which aims to provide promising avenues for future research on sustainability transitions in developing countries.
System building in the Kenyan electrification regime: The case of private solar mini-grid development

Given the growing interest in the ability of the private sector to contribute to the goal of providing universal access to energy in developing countries, this study sets out to investigate the practices and business approaches of private actors in the emerging niche of private mini-grid development in Kenya. The paper’s analytical focus is on how niche actors are influencing and creating change in the incumbent electrification regime of grid extension to strengthen and expand the niche for private mini-grids. The analysis shows that, in addition to internal niche processes like the alignment of expectations, learning and network building, niche actors actively engage in various forms of institutional work. The greatest emphasis here is on regulatory institutional work in order to influence legal and economic frameworks, but niche actors also engage in cognitive institutional work to enhance acceptance of the niche technology by constructing a shared world view between niche and regime actors. Interestingly, niche actors also engage in normative work to establish positive normative associations with the private-sector model, like equity and social justice. The research concludes that in this case institutional work is collective work drawing on different mandates and relying on different skills and resources.

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Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Pedersen, M. B. (Intern), Nygaard, I. (Intern)
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Scopus rating (2013): SJR 1.695 SNIP 1.999 CiteScore 4.08
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.499 SNIP 1.652 CiteScore 3.35
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.299 SNIP 1.689 CiteScore 3.06
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.271 SNIP 1.338
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.155 SNIP 1.56
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.991 SNIP 1.094
Scopus rating (2007): SJR 0.936 SNIP 1.565
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.694 SNIP 1.421
Scopus rating (2005): SJR 0.607 SNIP 1.166
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.598 SNIP 1.227
Scopus rating (2003): SJR 0.39 SNIP 0.701
Scopus rating (2002): SJR 0.467 SNIP 0.581
Scopus rating (2001): SJR 0.327 SNIP 0.301
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.429 SNIP 0.814
Scopus rating (1999): SJR 0.197 SNIP 0.273
Original language: English
Developing countries, Geography of transitions, Inclusive development, Inclusive innovation, Niche development, Socio-technical regimes, Sustainability transitions
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Source-ID: 85037595233
Publication: Research - peer-review › Journal article – Annual report year: 2018
Techno-environmental assessment of the green biorefinery concept: Combining process simulation and life cycle assessment at an early design stage

The Green biorefinery (GBR) is a biorefinery concept that converts fresh biomass into value-added products. The present study combines a Process Flowsheet Simulation (PFS) and Life Cycle Assessment (LCA) to evaluate the technical and environmental performance of different GBR configurations and the cascading utilization of the GBR output. The GBR configurations considered in this study, test alternatives in the three main steps of green-biorefining: fractionation, precipitation, and protein separation. The different cascade utilization alternatives analyse different options for press-pulp utilization, and the LCA results show that the environmental profile of the GBR is highly affected by the utilization of the press-pulp and thus by the choice of conventional product replaced by the press-pulp. Furthermore, scenario analysis of different GBR configurations shows that higher benefits can be achieved by increasing product yields rather than lowering energy consumption. Green biorefining is shown to be an interesting biorefining concept, especially in a Danish context. Biorefining of green biomass is technically feasible and can bring environmental savings, when compared to conventional production methods. However, the savings will be determined by the processing involved in each conversion stage and on the cascade utilization of the different platform products.
Technological shape and size: A disaggregated perspective on sectoral innovation systems in renewable electrification pathways

The sectoral innovation system perspective has been developed as an analytical framework to analyse and understand innovation dynamics within and across various sectors. Most of the research conducted on sectoral innovation systems has focused on an aggregate-level analysis of entire sectors. This paper argues that a disaggregated (sub-sectoral) focus is more suited to policy-oriented work on the development and diffusion of renewable energy, particularly in countries with rapidly developing energy systems and open technology choices. It focuses on size, distinguishing between small-scale (mini-grids) and large-scale (grid-connected) deployment paths in renewable energy. We explore how the development and diffusion of solar PV and wind technology evolve in these sub-sectoral systems. We find that innovation and diffusion dynamics differ more between small and large than between wind and solar. This has important analytical implications.
because the disaggregated perspective allows us to identify trajectories that cut across conventionally defined core technologies. This is important for ongoing discussions of electrification pathways in developing countries. We conclude the paper by distilling the implications of these findings in terms of the requirements and incentive mechanisms that shape different pathways.

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, Aalborg University, Moi University
Authors: Hansen, U. E. (Intern), Gregersen, C. (Ekstern), Lema, R. (Ekstern), Samoita, D. (Ekstern), Wandera, F. (Ekstern)
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BFI (2014): BFI-level 1
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ISI indexed (2013): ISI indexed no
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Diffusion, Electrification pathways, Kenya, Mini-grids, Renewable energy, Sectoral innovation systems, Solar PV, Wind energy
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The evolution of facility management business models in supplier–client relationships
Purpose – The study improves the current understanding of business model innovation by outlining how business models unfold over time within supplier–client relationships in facilities management (FM) services.
Design/methodology/approach – This study of FM services in Denmark consists of an explorative case study and three case studies of facilities management clients. Both phases, related and overlapping, involved collection and analysis of in-depth, semi-structured interviews and archive data.
Findings – Findings shows that business model innovation entails interorganisational collaboration across different phases of the innovation process. The research demonstrates that external orientation within FM service ecosystems involves both a reaction to changes in the external environment and the proactive involvement of stakeholders throughout business model innovation.
Research limitations/implications – The selection of business model innovation processes was limited to the Danish context. The sample, although heterogeneous and representative, represented only a fraction of the total population, which may have excluded processes of business model innovation that contradict the research.
Practical implications – This paper suggests that by observing the business models of the value network over time, organisations could learn from the interdependencies between intra- and interorganisational stakeholders, thereby supporting the monitoring of risks and uncertainties as well as the anticipation of potential consequences of changes in the ecosystem.
Originality/value – This paper introduces new thinking on the subject of business model innovation to the context of FM. It presents the external orientation of FM business models as a way to combine planned and emergent business model innovation through interorganisational collaboration and value creation in FM ecosystems.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Copenhagen Business School
The impact of applying product-modelling techniques in configurator projects

This paper aims to increase understanding of the impact of using product-modelling techniques to structure and formalise knowledge in configurator projects. Companies that provide customised products increasingly apply configurators in support of sales and design activities, reaping benefits that include shorter lead times, improved quality of specifications and products, and lower overall product costs. The design and implementation of configurators are a challenging task that calls for scientifically based modelling techniques to support the formal representation of configurator knowledge. Even though extant literature has shown the importance of formal modelling techniques, the impact of utilising these techniques remains relatively unknown. Therefore, this article studies three main areas: (1) the impact of using modelling techniques based on Unified Modelling Language (UML), in which the phenomenon model and information model are considered visually, (2) non-UML-based modelling techniques, in which only the phenomenon model is considered and (3) non-formal modelling techniques. This study analyses the impact to companies from increased availability of product knowledge and improved control of product variants. The methodology employed is an exploratory survey, followed by interviews with 18 manufacturing companies providing customised products. The results indicate that companies using UML-based modelling techniques tend to have improved documentation of their product knowledge and an improved ability to reduce the number of product variants. This paper contributes to an increased understanding of what companies can gain from using more formalised modelling techniques in configurator projects, and under what circumstances they should be used.
The implications of how climate funds conceptualize transformational change in developing countries

The search for globally coordinated mitigation strategies that could contribute effectively towards bridging the gap between current emissions reduction efforts and a rapidly closing 2°C climate target remains contentious. The participation of developing countries through Nationally Appropriate Mitigation Actions (NAMAs) is emerging as a crucial feature to attain this goal. Against this background, two of the major NAMA funding agencies have embraced ‘transformational change (TC)’ and ‘paradigm shifts’ as policy concepts. Yet, their operationalization within aid management approaches has not been fully justified. Concurrently, academic interest in theories of sustainability transitions has been growing, out of which the Transition Management (TM) approach provides the theoretical inspiration to study, and eventually promote, systemic TCs. However, there is still limited knowledge with which to contextualize the steering of such transitions to different settings. This article engages in these debates by reviewing the theoretical grounding behind the Green Climate Fund and the NAMA Facility’s conceptualizations of TC through NAMA interventions against the corresponding theoretical assumptions of TM. Based on a critical review of relevant literature, it is argued that the logical framework based approach adopted by the funds contains implicit assumptions of causality, which do not adequately cater for the uncertainties, non-linearity and feedback loops inherent in transition processes. The incorporation of more adaptive and reflexive elements is proposed as an alternative. This paper contributes to existing knowledge by critically reflecting on the applicability of TM towards governing sociotechnical transitions in the developing world and by exposing the limitations behind the current thinking underpinning NAMA funding. In conclusion, the systems perspective adopted in sustainability transition theories is thus recommended as a more rewarding approach towards understanding how attempts at transforming paradigms through support to climate policies and actions in developing countries are played out.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, UNEP DTU Partnership, Wuppertal Institute for Climate, Environment and Energy
Authors: Boodoo, Z. (Intern), Mersmann, F. (Ekstern), Olsen, K. H. (Intern)
Number of pages: 14
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Main Research Area: Technical/natural sciences

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Journal: Climate and Development
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Ratings:
BFI (2018): BFI-level 2
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BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.69 SJR 0.805 SNIP 0.792
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.71 SNIP 0.65 CiteScore 1.66
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.778 SNIP 0.758 CiteScore 1.63
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.522 SNIP 0.633 CiteScore 1.11
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Scopus rating (2012): SJR 0.361 SNIP 0.68 CiteScore 1.13
ISI indexed (2012): ISI indexed no
Scopus rating (2011): SJR 0.429 SNIP 0.565 CiteScore 0.74
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 0.33 SNIP 0.941
Original language: English
Climate change mitigation policies and actions, Transition management, Logical Framework, Transformational change, Development aid
DOIs:
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The International Location Decision: A Study of Manufacturing Firms

The aim of this paper is to build a broader understanding of the international location decision (ILD) of manufacturing by investigating and mapping Danish manufacturing firms’ related activities and underlying processes. Using an exploratory survey approach on 17 Danish firms, the study shows there is less emphasis on cost than in past studies and a large unstructured human influence. A framework containing six categories of ILD factors—cost, labor and social characteristics, infrastructure, politics and regulations, economics, and markets and resources—and an assessment of their respective single factors are presented. Lastly, the paper identifies five major shortcomings in the current practice: unstructured processes, noninvolvement of the operational level of the organization, static perspective of dynamic factors, uneven balance between quantitative and qualitative factors, and no organizational learning. For engineering managers facing an ILD, the insights in this paper can be used to reflect and identify potential shortcomings in own practice of ILDs and help re-focusing future process designs.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Management Science, Operations Management, Technical University of Denmark
Authors: Touray, E. (Ekstern), Schmidt, A. (Ekstern), Herbert-Hansen, Z. N. L. (Intern)
Publication date: 2018
Main Research Area: Technical/natural sciences

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Journal: International Journal of Manufacturing Technology and Management
ISSN (Print): 1368-2148
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.23 SJR 0.135 SNIP 0.182
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.183 SNIP 0.289 CiteScore 0.31
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.19 SNIP 0.465 CiteScore 0.32
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.284 SNIP 0.43 CiteScore 0.38
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.353 SNIP 0.517 CiteScore 0.48
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.199 SNIP 0.346 CiteScore 0.39
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.298 SNIP 0.397
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.302 SNIP 0.61
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.256 SNIP 0.507
Scopus rating (2007): SJR 0.21 SNIP 0.304
Scopus rating (2006): SJR 0.19 SNIP 0.291
Scopus rating (2005): SJR 0.18 SNIP 0.159
Scopus rating (2004): SJR 0.16 SNIP 0.217
Scopus rating (2003): SJR 0.184 SNIP 0.272
Scopus rating (2002): SJR 0.182 SNIP 0.141
Scopus rating (2001): SJR 0.143 SNIP 0.178
Original language: English
The North Sea Offshore Wind Service Industry: Status, perspectives and a joint action plan

The Offshore Wind Service sector is about to established itself as an industrial sector with an own identity, own organisation, and with large future challenges. The article introduces this new sector, including assessment of present and future market sizes. The overall aim of the research reported in this article was to increase the innovation capacity of the European offshore wind servicing (OWS) sector by establishing cross-regional cooperation and intensifying the relationship between research and the offshore wind industry. The article uses the concept of innovation system foresight (ISF). The linking of the two concepts of foresight and innovation systems has been explored by several studies, but ISF takes a further integration of the two concepts. The article presents a set of concrete actions at multiple levels to support the development of the offshore wind service sector. The findings provides an input for a concerted effort for supporting both the offshore wind development and the emerging clusters of offshore wind services around the North Sea. In addition, the article addresses the value of the ISF approach to such policy development.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU, Department of Wind Energy, Integration & Planning
Authors: Andersen, P. D. (Intern), Clausen, N. (Intern), Cronin, T. (Intern), Piirainen, K. A. (Intern)
Pages: 2672-2683
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Main Research Area: Technical/natural sciences

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Journal: Renewable and Sustainable Energy Reviews
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Issue number: 2
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BFI (2018): BFI-level 2
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BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 9.52 SJR 3.051 SNIP 3.454
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.999 SNIP 3.387 CiteScore 8.35
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 3.106 SNIP 3.761 CiteScore 7.79
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 3.072 SNIP 3.889 CiteScore 7.88
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.814 SNIP 3.915 CiteScore 7.24
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.787 SNIP 3.901 CiteScore 7.39
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.374 SNIP 3.112
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.494 SNIP 3.6
BFI (2008): BFI-level 2
The profit maximizing liner shipping problem with flexible frequencies: logistical and environmental considerations

The literature on liner shipping includes many models on containership speed optimization, fleet deployment, fleet size and mix, network design and other problem variants and combinations. Many of these models, and in fact most models at the tactical planning level, assume a fixed revenue for the ship operator and as a result they typically minimize costs. This treatment does not capture a fundamental characteristic of shipping market behavior, that ships tend to speed up in periods of high freight rates and slow down in depressed market conditions. This paper develops a simple model for a fixed route scenario which, among other things, incorporates the influence of freight rates, along with that of fuel prices and cargo inventory costs into the overall decision process. The objective to be maximized is the line’s average daily profit. Departing from convention, the model is also able to consider flexible service frequencies, to be selected from a broader set than the standard assumption of one call per week. It is shown that this may lead to better solutions and that the cost of forcing a fixed frequency can be significant. Such cost is attributed either to additional fuel cost if the fleet is forced to sail faster to accommodate a frequency that is higher than the optimal one, or to lost income if the opposite is the case. The impact of the line’s decisions on CO2 emissions is also examined and illustrative runs of the model are made on three existing services.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Management Science, Transport DTU, Operations Management, Università degli Studi di Padova
Authors: Giovannini, M. (Ekstern), Psaraftis, H. N. (Intern)
Number of pages: 31
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Journal: Flexible Services and Manufacturing Journal
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Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.32 SJR 1.553 SNIP 1.582
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.211 SNIP 1.375 CiteScore 2.21
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.058 SNIP 1.797 CiteScore 1.68
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.252 SNIP 1.656 CiteScore 1.48
The relation between the perception of safe traffic and the comprehension of road signs in conditions of ambiguous and redundant information

This study proposes the investigation of the relations between the perception of safety improvement, the provision of information with road signs, the amount of provided information, and observable and unobservable traits of road users. A web-based survey collected information about the estimation of conflicts and the perception of safety improvement in 12 traffic locations grouped according to (i) low amount of information that generated ambiguity and (ii) high amount of information that generated redundancy. Moreover, the web-based survey gathered information about socioeconomic characteristics, driving frequency, driving habits, driving style and need of closure of road users, the latter being measured with two validated psychometric scales. The survey was administered to 753 Hungarians with expertise in transport and traffic (for the purpose of having a good estimation of safety improvements) and experience with redundant information (for the purpose of having a sample familiar with one of the issues). A Structural Equation Modelling approach allowed estimating a system of relations that suggested the following: (i) the perception of safety improvement is not related only to road sign comprehension, but also to the amount of information and, more relevantly, the driving style and the information processing needs of the drivers; (ii) the perception that road signs improve safety varies with gender, age, driving frequency and driving habits, thus making the purpose of road signs to reduce conflict a more complex task because of the effect of the traits of the road users; (iii) the road design should adhere to three of the principles of sustainable safety that have been proposed to design self-explanatory roads; (iv) solutions should look into personalised driving assistance that would be able to address the different needs that drivers have to feel safe.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, University of Queensland, Technical University of Denmark
Authors: Kaplan, S. (Intern), Bortei-Doku, S. (Ekstern), Prato, C. G. (Ekstern)
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Main Research Area: Technical/natural sciences
Publication information
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Volume: 55
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Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.36 SJR 1.065 SNIP 1.392
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.023 SNIP 1.454 CiteScore 2.06
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.986 SNIP 1.601 CiteScore 2.02
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.988 SNIP 1.765 CiteScore 2.22
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.62 SNIP 2.441 CiteScore 2.54
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.28 SNIP 2.175 CiteScore 2.56
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.184 SNIP 1.651
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.359 SNIP 1.824
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.422 SNIP 2.018
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.796 SNIP 1.279
Scopus rating (2006): SJR 0.949 SNIP 1.521
Scopus rating (2005): SJR 0.698 SNIP 1.515
Scopus rating (2004): SJR 0.429 SNIP 1.255
Scopus rating (2003): SJR 0.462 SNIP 1.025
Scopus rating (2002): SJR 0.414 SNIP 0.769
Scopus rating (2001): SJR 0.311 SNIP 0.536
Scopus rating (2000): SJR 0.238 SNIP 1.302
Scopus rating (1999): SJR 0.164 SNIP 0.462
Original language: English
Amount of information, Perception of safe traffic, Provision of information, Road sign comprehension, Structural equation modelling
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The rise and fall of foreign private investment in the jatropha biofuel value chain in Ghana

The article draws on the multi-level perspective (MLP) and global value chain (GVC) frameworks to analyse the drivers and trajectories of foreign private investment in biofuel production in Ghana. It is based on a narrative of the evolution of a niche for jatropha production in Ghana in the period 1995 - 2016 including company case studies. The factors analysed relating to MLP are alignment of expectations, network formation, and learning and knowledge sharing, and those relating to GVC are chain structure, governance, ownership, and access to land and capital. High entry barriers for creating a new agriculture-based value chain for global biofuel markets, i.e. high volume requirements, high capital needs, and market risks contributed to the collapse of the jatropha sector in Ghana. A low level of learning and knowledge sharing between jatropha actors in Ghana, alongside weak public R&D support, reduced access to technical and managerial information. Confirming previous GVC research on biofuels, policy and NGOs had a stronger influence on the jatropha value chain than in typical agricultural chains. Moreover, global drivers and the strategies and capabilities of foreign investors can strongly influence the development of a new biofuel value chain in a developing country. The latter points complement previous research on jatropha, which highlights politicoeconomic factors such as land tenure, regional and local power relations, and the interests of donors and NGOs. The study exemplifies a nonevolutionary niche development that goes beyond the European experiences of industrial niche development on which the MLP framework was first established. The importance of investors and policy at different levels of the value chain illustrate the synergies in combining the MLP and GVC frameworks in research on energy transitions in developing countries.

General information
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Organisations: Department of Management Engineering, UNEP DTU Partnership, Systems Analysis
Authors: Nygaard, I. (Intern), Bolwig, S. (Intern)
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Journal: Environmental Science & Policy
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.9 SJR 1.656 SNIP 1.605
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.647 SNIP 1.514 CiteScore 3.83
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.826 SNIP 1.848 CiteScore 4.02
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.695 SNIP 1.999 CiteScore 4.08
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.499 SNIP 1.652 CiteScore 3.35
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.299 SNIP 1.689 CiteScore 3.06
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.271 SNIP 1.338
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.155 SNIP 1.56
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.991 SNIP 1.094
Scopus rating (2007): SJR 0.936 SNIP 1.565
The Role of Population, Affluence, Technological Development and Diet in a Below 2 °C World

The rise in anthropogenic greenhouse gas emissions and the resultant temperature anomaly in the global climate can be simplified to a function of (1) the global population, (2) economic activity and (3) technological development for thought experiments. Diet, given the embodied process emissions in producing food, is also acknowledged as an important factor. Growth in the first two factors tends to increase environmental impacts while technological development can reduce them. In this chapter, the impact from these four variables, their interdependencies and importance are illustrated. To do so, three different model frameworks are combined namely IPAT, Ecological Footprint and Integrated Assessment Modelling, to illustrate the challenges to finding pathways to maintain a well below 2 °C world. The model setup developed for this chapter estimates the global mean temperature increase to 2100 and the needed land area to support human life as a function of population, affluence, technological development and diet. It is shown that focusing on technology development alone will likely not be enough to mitigate global warming and stay well below a 2 °C temperature increase. Therefore, the discussion about population, consumption, development and diet shifting should be high on the agenda for reducing energy demands and for increasing the feasibility of maintaining a well below 2 °C world.

General information

State: Published
Organisations: Department of Management Engineering, Systems Analysis, Department of Civil Engineering, Section for Building Energy, Global Footprint Network, Geneva, Switzerland, University College Cork, Kanors, Technical University of Denmark
Authors: Karlsson, K. (ed.) (Intern), Nørgaard, J. (Intern), Bermudez, J. G. (Intern), Balyk, O. (Intern), Wackernagel, M. (Ekstern), Glynn, J. (Ekstern), Kanudia, A. (Ekstern)
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Series: Lecture Notes in Energy
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Source: FindIt
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Publication: Research - peer-review › Book chapter – Annual report year: 2018

Trace of Knowledge: Benchmarking Novel Text Mining Based Measurements

The impact of public research outcomes on economies, and societies, in particular, in terms of innovation and development is widely accepted and empirically investigated [9, 3]. However, many studies suggest a systematic underestimation of the impact and benefits of public research. Empirical studies describe that current approaches capture only specific aspects of knowledge transfer between public research institutions and private entities. The main interrelated reasons contributing to this systematic underestimation are that most established knowledge transfer measurements focus on intermediaries and use proxyindicators like patents, licenses, spin-outs and co-publications as data sources, but these
metrics are problematic because they can result in type I and type II errors, since many of them capture a transfer that is never utilized by a private entity (e.g. like unused patents). In addition, there are occasions where the proxy is not met so the actual use is not being captured.

We try to improve this systematic underestimation by adapting novel computer linguistics methods to this field and putting them into perspective with the existing measures of knowledge transfer. We use both basic and more advanced statistical learning tools from the field of computational linguistics and statistical learning to trace the knowledge fragments[2, 6]. In addition, we utilize a mixture of standard algebraic and probabilistic methods. Furthermore, pattern recognition, classification algorithms help to trace the public research outcomes, going beyond plain word co-occurrence.
Using business critical design rules to frame new architecture introduction in multi-architecture portfolios

When introducing new architectures to an industrial portfolio, counting multiple existing product and manufacturing solutions, time-to-market and investments in manufacturing equipment can be significantly reduced if new concepts are aligned with the existing portfolio. This can be done through component sharing, or sharing critical design principles. This alignment is not trivial, as extensive design knowledge is needed to overview a portfolio with many, often highly different products and manufacturing lines. In this paper, we suggest establishing a frame of reference for new-product introduction based on several â€œgame rulesâ€, or Business Critical Design Rules (BCDRs), which denote the most critical features of the product and manufacturing architectures, and should be considered an obligatory reference for design when introducing new architectures. BCDRs are derived from the portfolio, architecture and module levels, including modelling of the most critical links between the product and manufacturing domains. The suggested modelling principle has been tested as a frame for new-architecture introduction, capturing critical modularisation principles in a large and global OEM. Application of the suggested method revealed a potential for reducing time-to-market and potentially cutting 35% off investments in new manufacturing equipment when introducing new products in the portfolio.

General information
State: Accepted/In press
Organisations: Department of Mechanical Engineering, Engineering Design and Product Development, Department of Management Engineering, Management Science, Operations Management
Authors: Løkkegaard, M. (Intern), Mortensen, N. H. (Intern), Hvam, L. (Intern)
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Journal: International Journal of Production Research
ISSN (Print): 0020-7543
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.67 SJR 1.463 SNIP 1.416
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.286 SNIP 1.309 CiteScore 2.29
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.278 SNIP 1.347 CiteScore 2.15
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.231 SNIP 1.531 CiteScore 2.09
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.272 SNIP 1.565 CiteScore 1.93
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.154 SNIP 1.381 CiteScore 1.69
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.904 SNIP 1.1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.792 SNIP 1.102
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.934 SNIP 1.317
Scopus rating (2007): SJR 0.889 SNIP 1.251
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.979 SNIP 1.395
Utilizing thermal building mass for storage in district heating systems: Combined building level simulations and system level optimization

Higher shares of intermittent renewable energy in energy systems have raised the issue of the need for different energy storage solutions. The utilization of existing thermal building mass for storage is a cost-efficient solution. In order to investigate its potential, a detailed building simulation model was coupled with a linear optimization model of the energy system. Different building archetypes were modelled in detail, and their potential preheating and subsequent heat supply cut-off periods were assessed. Energy system optimization focused on the impact of thermal mass for storage on the energy supply of district heating. Results showed that longer preheating time increased the possible duration of cut-off events. System optimization showed that the thermal mass for storage was used as intra-day storage. Flexible load accounted for 5.5%–7.7% of the total district heating demand. Furthermore, thermal mass for storage enabled more solar thermal heating energy to be effectively utilized in the system. One of the sensitivity analyses showed that the large-scale pit thermal energy storage and thermal mass for storage are complimentary. The cut-off duration potential, which did not compromise thermal comfort, was longer in the newer, better insulated buildings, reaching 6h among different building archetypes.

General information
State: Published
Organisations: Department of Energy Conversion and Storage, Department of Civil Engineering, Section for Indoor Climate and Building Physics, Department of Management Engineering, Systems Analysis, Centre for IT-Intelligent Energy Systems in Cities
Authors: Dominkovic, D. F. (Intern), Gianniou, P. (Intern), Münster, M. (Intern), Heller, A. (Intern), Rode, C. (Intern)
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Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Energy
Volume: 153
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Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.17 SJR 1.999 SNIP 1.798
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
We Need a Masterplan For Real Estate and Facilities Management! Ambition of Change at the Faculty of Medicine Chiang Mai University Thailand

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Capital Region of Denmark, Chiang Mai University, Norwegian University of Science and Technology
Authors: Nielsen, S. B. (Ekstern), Prugsiganont, S. (Intern), Fronczek-Munter, A. (Ekstern), Waroonkun, T. (Ekstern)
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We Need a Masterplan For Real Estate and Facilities Management! Ambition of Change at the Faculty of Medicine Chiang Mai University Thailand

General information
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Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Capital Region of Denmark, Chiang Mai University, Norwegian University of Science and Technology
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Pages: 8-11
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Young drivers' perception of adult and child pedestrians in potential street-crossing situations

Despite overall improvements in road traffic safety, pedestrian accidents continue to be a serious public health problem. Due to lack of experience, limited cognitive and motoric skills, and smaller size, children have a higher injury risk as pedestrians than adults. To what extent drivers adjust their driving behaviour to children's higher vulnerability is largely unknown. To determine whether young male drivers' behaviour and scanning pattern differs when approaching a child and an adult pedestrian in a potential street-crossing situation, sixty-five young (18-24) male drivers' speed, lateral position and eye movements were recorded in a driving simulator. Results showed that fewer drivers responded by slowing down and that drivers had a higher driving speed when approaching a child pedestrian, although the time of the first fixation on both types of pedestrians was the same. However, drivers drove farther away from a child than an adult pedestrian. Additionally, fewer drivers who did not slow down fixated on the speedometer while approaching the child pedestrian. The results show that young drivers behave differently when approaching a child and an adult pedestrian, though not in a way that appropriately accounts for the limitations of a child pedestrian. A better understanding of how drivers respond to different types of pedestrians and why could contribute to the development of pedestrian detection and emergency braking systems.
D-efficient or deficient? A robustness analysis of stated choice experimental designs

This paper is motivated by the increasing popularity of efficient designs for stated choice experiments. The objective in efficient designs is to create a stated choice experiment that minimizes the standard errors of the estimated parameters. In order to do so, such designs require specifying prior values for the parameters to be estimated. While there is significant literature demonstrating the efficiency improvements (and cost savings) of employing efficient designs, the bulk of the literature tests conditions where the priors used to generate the efficient design are assumed to be accurate. However, there is substantially less literature that compares how different design types perform under varying degree of error of the prior. The literature that does exist assumes small fractions are used (e.g., under 20 unique choice tasks generated), which is in contrast to computer-aided surveys that readily allow for large fractions. Further, the results in the literature are abstract in that there is no reference point (i.e., meaningful units) to provide clear insight on the magnitude of any issue.

Our objective is to analyze the robustness of different designs within a typical stated choice experiment context of a trade-off between price and quality. We use as an example transportation mode choice, where the key parameter to estimate is the value of time (VOT). Within this context, we test many designs to examine how robust efficient designs are against a misspecification of the prior parameters. The simple mode choice setting allows for insightful visualizations of the designs themselves and also an interpretable reference point (VOT) for the range in which each design is robust. Not surprisingly, the D-efficient design is most efficient in the region where the true population VOT is near the prior used to generate the design: the prior is $20/h and the efficient range is $10–$30/h. However, the D-efficient design quickly becomes the most inefficient outside of this range (under $5/h and above $40/h), and the estimation significantly degrades above $50/h. The orthogonal and random designs are robust for a much larger range of VOT. The robustness of Bayesian efficient designs varies depending on the variance that the prior assumes. Implementing two-stage designs that first use a small sample to estimate priors are also not robust relative to uninformative designs. Arguably, the random design (which is the easiest to generate) performs as well as any design, and it (as well as any design) will perform even better if data cleaning is done to remove choice tasks where one alternative dominates the other.

General information
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Potential to curb the environmental burdens of American beef consumption using a novel plant-based beef substitute

The food demands of the United States (US) impart significant environmental pressures. The high rate of consumption of beef has been shown to be the largest driver of food-borne greenhouse gas emissions, water use and land occupation in the US diet. The environmental benefits of substituting animal products with vegetal foods are well documented, but significant psychological barriers persist in reducing meat consumption. Here we use life cycle assessment to appraise the environmental performance of a novel vegetal protein source in the mean US diet where it replaces ground beef, and in vegetarian and vegan diets where it substitutes for legumes, tofu and other protein sources. We find that relative to the mean US diet, vegetarian and vegan diets significantly reduce per-capita food-borne greenhouse gas emission (32% and 67%, respectively), blue water use (70% and 75%, respectively) and land occupation (70% and 79%, respectively), primarily in the form of rangeland. The substitution of 10%, 25% and 50% of ground beef with plant-based burger (PBB) at
the national scale results in substantial reductions in annual US dietary greenhouse gas emissions (4.55–45.42 Mt CO\textsubscript{2} equivalents), water consumption (1.30–12.00 km\textsuperscript{3}) and land occupation (22300–190100 km\textsuperscript{2}). Despite PBB’s elevated environmental pressures compared to other vegetal protein sources, we demonstrate that minimal risk exists for the disservices of PBB substitution in non-meat diets to outweigh the benefits of ground-beef substitution in the omnivorous American diet. Demand for plant-based oils in PBB production has the potential to increase land use pressures in biodiversity hotspots, though these could be obviated through responsible land stewardship. Although the apparent environmental benefits of the PBB are contingent on actual uptake of the product, this study demonstrates the potential for non-traditional protein substitutes to play a role in a transition towards more sustainable consumption regimes in the US and potentially abroad.
The role of intention as mediator between latent effects and behavior: application of a hybrid choice model to study departure time choices

An increasing number of papers are focusing on integrating psychological aspects into the typical discrete choice models. The majority of these studies account for several latent effects, but they mainly focused on the direct effect of attitudes, perception, and norms in the discrete choice. None of them consider the effect of intention and its role as mediator between those psychological effects and the choice, as implied in the Theory of Planned Behavior. In this paper we contribute to the literature in this field by specifically studying the direct effect of the intention on the actual behavior, while attitude, social norms, and perceived behavioral control affect the intention to behave in a given way. We apply a hybrid choice model to study the departure time choice. For this, we use data from Danish commuters in the morning rush hours in the Greater Copenhagen area. We find a significant effect of the intention to arrive at work on time on the departing time choice, and also a significant effect of the lower level mediators on intention. Furthermore, the attitude toward short travel time is also significant in explaining the departure time choice. Finally, in terms of forecasting, we find that individuals who have a strong intention to be at work on time will be less likely to reschedule their departure time. This suggests that campaigns targeting the working culture could affect the subject norms among colleagues, which in turn influence individuals’ intention to be on time or to reschedule to a less congested time slot.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Newcastle University, University of California at Berkeley
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BFI (2015): BFI-level 2
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BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.781 SNIP 2.06 CiteScore 2.49
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Scopus rating (2013): SJR 1.573 SNIP 1.833 CiteScore 2.03
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Scopus rating (2012): SJR 1.265 SNIP 1.556 CiteScore 1.61
Ecosystem quality in LCIA: status quo, harmonization, and suggestions for the way forward

Purpose: Life cycle impact assessment (LCIA) results are used to assess potential environmental impacts of different products and services. As part of the UNEP-SETAC life cycle initiative flagship project that aims to harmonize indicators of potential environmental impacts, we provide a consensus viewpoint and recommendations for future developments in LCIA related to the ecosystem quality area of protection (AoP). Through our recommendations, we aim to encourage LCIA developments that improve the usefulness and global acceptability of LCIA results. Methods: We analyze current ecosystem quality metrics and provide recommendations to the LCIA research community for achieving further developments towards comparable and more ecologically relevant metrics addressing ecosystem quality. Results and discussion: We recommend that LCIA development for ecosystem quality should tend towards species-richness-related metrics, with efforts made towards improved inclusion of ecosystem complexity. Impact indicators—which result from a range of modeling approaches that differ, for example, according to spatial and temporal scale, taxonomic coverage, and whether the indicator produces a relative or absolute measure of loss—should be framed to facilitate their final expression in a single, aggregated metric. This would also improve comparability with other LCIA damage-level indicators. Furthermore, to allow for a broader inclusion of ecosystem quality perspectives, the development of an additional indicator related to ecosystem function is recommended. Having two complementary metrics would give a broader coverage of ecosystem attributes while remaining simple enough to enable an intuitive interpretation of the results. Conclusions: We call for the LCIA research community to make progress towards enabling harmonization of damage-level indicators within the ecosystem quality AoP and, further, to improve the ecological relevance of impact indicators.

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Norwegian University of Science and Technology, Irstea, U.S. Environmental Protection Agency, European Commission Joint Research Centre Institute, University of Alberta, ETH Zurich, Radboud University Nijmegen, University of Texas
Authors: Woods, J. S. (Ekstern), Damiani, M. (Ekstern), Fantke, P. (Intern), Henderson, A. D. (Ekstern), Johnston, J. M. (Ekstern), Bare, J. (Ekstern), Sala, S. (Ekstern), Maia de Souza, D. (Ekstern), Pfister, S. (Ekstern), Posthuma, L. (Ekstern), Rosenbaum, R. K. (Ekstern), Verones, F. (Ekstern)
The accountability imperative for quantifying the uncertainty of emission forecasts: evidence from Mexico

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Governmental climate change mitigation targets are typically developed with the aid of forecasts of greenhouse-gas (GHG) emissions. The robustness and credibility of such forecasts depends, among other issues, on the extent to which forecasting approaches can reflect prevailing uncertainties. We apply a transparent and replicable method to quantify the uncertainty associated with projections of gross domestic product growth rates for Mexico, a key driver of GHG emissions in the country. We use those projections to produce probabilistic forecasts of GHG emissions for Mexico. We contrast our probabilistic forecasts with Mexico’s governmental deterministic forecasts. We show that, because they fail to reflect such key uncertainty, deterministic forecasts are ill-suited for use in target-setting processes. We argue that (i) guidelines should be agreed upon, to ensure that governmental forecasts meet certain minimum transparency and quality standards, and (ii) governments should be held accountable for the appropriateness of the forecasting approach applied to prepare governmental forecasts, especially when those forecasts are used to derive climate change mitigation targets. POLICY INSIGHTS No minimum transparency and quality standards exist to guide the development of GHG emission scenario forecasts, not even when these forecasts are used to set national climate change mitigation targets. No accountability mechanisms appear to be in place at the national level to ensure that national governments rely on scientifically sound processes to develop GHG emission scenarios. Using probabilistic forecasts to underpin emission reduction targets represents a scientifically sound option for reflecting in the target the uncertainty to which those forecasts are subject, thus increasing the validity of the target. Setting up minimum transparency and quality standards, and holding governments accountable for their choice of forecasting methods could lead to more robust emission reduction targets nationally and, by extension, internationally.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, UNEP DTU Partnership, Delft University of Technology, Observatoire Français des conjonctures économiques
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Number of pages: 10
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Scopus rating (2014): SJR 1.215 SNIP 0.955 CiteScore 1.82
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.777 SNIP 0.827 CiteScore 1.36
ISI indexed (2013): ISI indexed yes
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Scopus rating (2012): SJR 0.95 SNIP 0.945 CiteScore 1.57
ISI indexed (2012): ISI indexed yes
Scenarios for sustainable heat supply and heat savings in municipalities - the case of Helsingør, Denmark

Local climate action is not only a domain of large cities, but also smaller urban areas that increasingly address climate change mitigation in their policy. The Danish municipality of Helsingør can achieve a substantial CO2 emissions reduction by transforming its heat supply and deploying heat savings. In this paper, we model the heating system of Helsingør, assess it from a simple socio- and private-economic perspective, develop future scenarios, and conduct an iterative process to derive a cost-optimal mix between district heating, individual heating and heat savings. The results show that in 2030 it is cost-optimal to reduce the heating demand by 20–39% by implementing heat savings, to deploy 32%–41% of district heating and to reduce heating-related CO2 emissions by up to 95% in comparison to current emissions. In 2050, the cost-optimal share of district heating in Helsingør increases to between 38 and 44%. The resulting average heating costs and CO2 emissions are found to be sensitive to biomass and electricity price. Although the findings of the study are mainly applicable for Helsingør, the combined use of the Least Cost Tool and modelling with energyPRO is useful in planning of heating and/or cooling supply for different demand configurations, geographical region and scale.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
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Pages: 1252-1263
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Journal: Energy
Volume: 137
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Web of Science (2017): Indexed yes
A Quantitative Property-Property Relationship for the Internal Diffusion Coefficients of Organic Compounds in Solid Materials

Indoor releases of organic chemicals encapsulated in solid materials are major contributors to human exposures and are directly related to the internal diffusion coefficient in solid materials. Existing correlations to estimate the diffusion coefficient are only valid for a limited number of chemical-material combinations. This paper develops and evaluates a quantitative property-property relationship (QPPR) to predict diffusion coefficients for a wide range of organic chemicals...
and materials. We first compiled a training dataset of 1103 measured diffusion coefficients for 158 chemicals in 32 consolidated material types. Following a detailed analysis of the temperature influence, we developed a multiple linear regression model to predict diffusion coefficients as a function of chemical molecular weight (MW), temperature, and material type (adjusted R2 of 0.93). The internal validations showed the model to be robust, stable and not a result of chance correlation. The external validation against two separate prediction datasets demonstrated the model has good predicting ability within its applicability domain (R2ext > 0.8), namely MW between 30 and 1178 g/mol and temperature between 4 and 180 °C. By covering a much wider range of organic chemicals and materials, this QPPR facilitates high-throughput estimates of human exposures for chemicals encapsulated in solid materials.

**General information**

State: Published  
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Transport DTU, University of Michigan  
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Web of Science (2017): Indexed yes  
BFI (2016): BFI-level 1  
Web of Science (2016): Indexed yes  
BFI (2015): BFI-level 1  
Scopus rating (2015): CiteScore 3.88  
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Web of Science (2014): Indexed yes  
BFI (2013): BFI-level 1  
Scopus rating (2013): CiteScore 3.63  
ISI indexed (2013): ISI indexed yes  
Web of Science (2013): Indexed yes  
BFI (2012): BFI-level 1  
Scopus rating (2012): CiteScore 2.72  
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Web of Science (2012): Indexed yes  
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Scopus rating (2011): CiteScore 2.42  
ISI indexed (2011): ISI indexed yes  
Web of Science (2011): Indexed yes  
BFI (2010): BFI-level 2  
Web of Science (2010): Indexed yes  
BFI (2009): BFI-level 2  
Web of Science (2009): Indexed yes  
BFI (2008): BFI-level 1  
Scopus rating (2008): SJR 0.757 SNIP 2.168  
Web of Science (2008): Indexed yes  
Scopus rating (2007): SJR 0.933 SNIP 3.724  
Web of Science (2007): Indexed yes
Could baseline establishment be counterproductive for emissions reduction? Insights from Vietnam’s building sector

This article provides insights into the role of institutions involved in climate governance working towards a future low-carbon society at the national level, within the global climate change governance architecture. Specifically, it contributes to understanding the fragmented governance of energy efficiency policy in developing countries by focussing on Vietnam’s building sector, identifying key institutions related to underlying discourses, national and international power relations, resource distribution and coalitions. It uses the case of baseline setting in developing Nationally Appropriate Mitigation Actions (NAMAs) to illustrate institutional dynamics, nationally and transnationally, as well as to question whether demands for baseline setting achieve the ideal trade-off between actual GHG emissions reduction and institutionalized demands for accountability. The analysis reveals that, in addition to domestic efforts and challenges, the international agenda greatly influences the energy efficiency policy arena. The article presents lessons to be learnt about policy processes from the specific Vietnamese case, reflecting on the role of international actors and discourses in it. Finally, it argues for the abolition of baselines in favour of adequate monitoring and evaluation, from the perspective that requirement for deviation from fictitious baselines is unproductive and only serves an international techno-managerial discourse.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Henrysson, M. (Intern), Lütken, S. (Intern), Puig, D. (Intern)
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BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.596 SNIP 1.268 CiteScore 2.42
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.215 SNIP 0.955 CiteScore 1.82
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.777 SNIP 0.827 CiteScore 1.36
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.95 SNIP 0.945 CiteScore 1.57
The reverse tragedy of the commons: an exploratory account of incentives for under-exploitation in an open innovation environment

This paper presents an empirical account of a phenomenon that we refer to as the ‘reverse tragedy of the commons’ in open innovation. The name signifies the ‘under-exploitation’ of intellectual property (IP) under weak appropriability. The name is this graphic because the tragedy is costly, and can also render IP effectively worthless and block innovation in the short to medium term. We propose that the tragedy is borne out of the interaction between enterprise characteristics, a competitive setting and the framework that is set by the policy intervention. This finding is pertinent to policy-makers with regard to the design of research, development and innovation instruments, as well as managers who must determine how to implement open practices in innovation.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Technology and Innovation Management, Gaia Consulting, Prime Minister's Office
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- BFI (2016): BFI-level 1
- Scopus rating (2016): CiteScore 1.56 SJR 0.653 SNIP 0.88
Endogenous scheduling preferences and congestion

We consider the timing of activities through a dynamic model of commuting with congestion, in which workers care solely about leisure and consumption. Implicit preferences for the timing of the commute form endogenously due to temporal agglomeration economies. Equilibrium exists uniquely and is indistinguishable from that of a generalized version of the classical Vickrey bottleneck model, based on exogenous trip-timing preferences, but optimal policies differ: the Vickrey model will misstate the benefits of a capacity increase, it will underpredict the benefits of congestion pricing, and pricing may make people better off even without considering the use of revenues.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Transport DTU, University of California Office of the President
Authors: Fosgerau, M. (Intern), Small, K. (Ekstern)
Number of pages: 31
Pages: 585-615
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Main Research Area: Technical/natural sciences
Modelling of electricity savings in the Danish households sector: from the energy system to the end-user

In this paper, we examine the value of investing in energy-efficient household appliances from both an energy system and end-user perspectives. We consider a set of appliance categories constituting the majority of the electricity consumption in the private household sector, and focus on the stock of products which need to be replaced. First, we look at the energy system and investigate whether investing in improved energy efficiency can compete with the cost of electricity supply from existing or new power plants. To assess the analysis, Balmorel, a linear optimization model for the heat and power sectors, has been extended in order to endogenously determine the best possible investments in more efficient home appliances. Second, we propose a method to relate the optimal energy system solution to the end-user choices by incorporating consumer behaviour and electricity price addition due to taxes. The model is nonexclusively tested on the Danish energy system under different scenarios. Computational experiments show that several energy efficiency measures in the household sector should be regarded as valuable investments (e.g., an efficient lighting system) while others would require some form of support to become profitable. The analysis quantifies energy and economic savings from the consumer side and reveals the impacts on the Danish power system and surrounding countries. Compared to a business-as-usual energy scenario, the end-user attains net economic savings in the range of 30–40 EUR per year, and the system can benefit of an annual electricity demand reduction of 140–150 GWh. The paper enriches the existing literature about energy efficiency modelling in households, contributing with novel models, methods, and findings related to the Danish case.

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Organisations: Department of Management Engineering, Systems Analysis, Management Science
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Learning from CDM SD tool experience for Article 6.4 in the Paris Agreement

The Paris Agreement (PA) emphasizes the intrinsic relationship between climate change and sustainable development (SD) and welcomes the 2030 agenda for the global Sustainable Development Goals (SDGs). Yet, there is a lack of assessment approaches to ensure that climate and development goals are achieved in an integrated fashion and trade-offs avoided. Article 6.4 of the PA introduces a new Sustainable Mitigation Mechanism (SMM) with the dual aim to contribute to the mitigation of greenhouse gas emissions and foster SD. The Kyoto Protocol’s Clean Development Mechanism (CDM) has a similar objective and in 2014, the CDM SD tool was launched by the Executive Board of the CDM to highlight the SD benefits of CDM activities. This article analyses the usefulness of the CDM SD tool for stakeholders and compares the SD tool’s SD reporting requirements against other flexible mechanisms and multilateral standards to provide recommendations for improvement. A key conclusion is that the Paris Agreement’s SMM has a stronger political mandate than the CDM to measure that SD impacts are ‘real, measurable and long-term’. Therefore, recommendations for an improved CDM SD tool are a relevant starting point to develop rules, modalities and procedures for SD assessment in Article 6.4 as well as for other cooperative mitigation approaches.
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BFI (2015): BFI-level 1
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Scopus rating (2013): SJR 0.777 SNIP 0.827 CiteScore 1.36
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
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ISI indexed (2012): ISI indexed yes
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Scopus rating (2011): SJR 1.019 SNIP 0.873 CiteScore 1.35
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.808 SNIP 1.15
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.683 SNIP 1.241
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.885 SNIP 0.962
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.398 SNIP 0.719
Scopus rating (2006): SJR 0.701 SNIP 1.388
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.92 SNIP 1.256
Scopus rating (2004): SJR 0.983 SNIP 1.511
Scopus rating (2003): SJR 0.684 SNIP 1.051
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A Bayesian Additive Model for Understanding Public Transport Usage in Special Events

Public special events, like sports games, concerts and festivals are well known to create disruptions in transportation systems, often catching the operators by surprise. Although these are usually planned well in advance, their impact is difficult to predict, even when organisers and transportation operators coordinate. The problem highly increases when several events happen concurrently. To solve these problems, costly processes, heavily reliant on manual search and personal experience, are usual practice in large cities like Singapore, London or Tokyo. This paper presents a Bayesian additive model with Gaussian process components that combines smart card records from public transport with context information about events that is continuously mined from the Web. We develop an efficient approximate inference algorithm using expectation propagation, which allows us to predict the total number of public transportation trips to the special event areas, thereby contributing to a more adaptive transportation system. Furthermore, for multiple concurrent event scenarios, the proposed algorithm is able to disaggregate gross trip counts into their most likely components related to specific events and routine behavior. Using real data from Singapore, we show that the presented model outperforms the best baseline model by up to 26 percent in R-2 and also has explanatory power for its individual components.

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State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Singapore-MIT Alliance for Research and Technology, University of Coimbra
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Web of Science (2016): Indexed yes
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Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.024 SNIP 7.97 CiteScore 11.05
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.715 SNIP 8.721 CiteScore 11.8
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.327 SNIP 9.043 CiteScore 10.09
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 3.207 SNIP 7.189 CiteScore 8.89
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 3.513 SNIP 7.095
BFI (2009): BFI-level 2
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 3.435 SNIP 7.286
A Branch-and-Price algorithm for railway rolling stock rescheduling

How to best reschedule their fleet of rolling stock units during a disruption is an optimization problem regularly faced by railway operators. Despite the problem's high complexity, it is still usually solved manually. In this paper we propose a path based mathematical formulation and solve it using a Branch-and-Price algorithm. We demonstrate that, unlike flow based approaches, our formulation is more easily extended to handle certain families of constraints, such as train unit maintenance restrictions. The proposed algorithm is benchmarked on several real-life instances provided by the suburban railway operator in Copenhagen, DSB S-tog. When used in combination with a lower bound method taken from the literature we show that near-optimal solutions to this rescheduling problem can be found within a few seconds. Furthermore, we show that the proposed methodology can be used, with minor modification, on a tactical planning level, where it produces near-optimal rolling stock schedules in minutes of CPU time.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Transport DTU, Optivation
Authors: Lusby, R. M. (Intern), Haahr, J. T. (Ekstern), Larsen, J. (Intern), Pisinger, D. (Intern)
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Scopus rating (2016): CiteScore 4.57 SJR 2.742 SNIP 2.433
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 3.027 SNIP 2.85 CiteScore 5.15
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 3.007 SNIP 3.022 CiteScore 4.21
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 3.203 SNIP 3.487 CiteScore 4.64
A Branch-and-Price Approach to the Feeder Network Design Problem

In this paper we consider the problem of designing a container liner shipping feeder network. The designer has to choose which port to serve during many rotations that start and end at a central hub. Many operational characteristics are considered, such as variable leg-by-leg speeds and cargo transit times. Realistic instances are generated from the LinerLib benchmark suite. The problem is solved with a branch-and-price algorithm, which can solve most instances to optimality within one hour. The results also provide insights on the cost structure and desirable features of optimal routes. These insights were obtained by means of an analysis where scenarios are generated varying internal and external conditions, such as fuel costs and port demands.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Transport DTU, RWTH Aachen University, Maersk Line
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Pages: 607–622
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: European Journal of Operational Research
Volume: 264
A case study of life cycle impacts of small-scale fishing techniques in Thailand

Fish provides an important source of protein, especially in developing countries, and the amounts of fish consumed are increasing worldwide (mostly from aquaculture). More than half of all marine fish are caught by small-scale fishery operations. However, no life cycle assessment (LCA) of small-scale fisheries and no LCA of marine fishery operations in Asia (Thailand) exists today. We perform LCAs to compare the impacts of three different fishing techniques: crab gill-nets, squid traps, and fish traps. Primary data sourced from four different fishers were used. We distinguished the life cycle inventories for three different seasons (northeast monsoon, southwest monsoon and pre-monsoon), since the time spent on the water and catch varied significantly between the seasons. Our results showed the largest impacts from artisanal fishing operations affect climate change, human toxicity, and fossil and metal depletion. Our results are, in terms of global warming potential, comparable with other artisanal fisheries. Between different fishing operations, impacts vary between a factor of 2 (for land transformation impacts) and up to a factor of more than 20 (fossil fuel depletion and marine eutrophication). This shows that the way in which operations are performed have a very strong influence on results. Seasonality plays a relevant role for the assessment. Our results highlight that it is important to account for seasonal aspects in LCAs. We encourage a continual effort for collecting and modeling inventory processes, as well as making them available, in order to guarantee that LCA studies outside of Europe can be performed more easily.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Norwegian University of Science and Technology, Kagoshima University, Kasetsart University, Tokyo University of Marine Science and Technology, National Institutes for the Humanities, Research Institute for Humanity and Nature
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Number of pages: 15
Publication date: 2017
Main Research Area: Technical/natural sciences

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Accelerating time to benefit: Deconstructing innovative organizational practices in five projects
Despite the ubiquitous pressure for speed, our approaches to accelerate projects remain constrained to the old-fashioned understanding of the project as a vehicle to deliver products and services, not value. This article explores an attempt to accelerate time to benefit. We describe and deconstruct the implementation of a large intervention undertaken in five project-based organizations in Denmark – the Project Half Double where the same project methodology has been applied in five projects, each of them in five distinct organizations in Denmark, as a bold attempt to realize double the benefit in half of the time. Although all cases valued speed and speed to benefit, and implemented most practices proposed by the methodology, only three of the five projects were more successful in decreasing time to speed. Based on a multi-case study comparison between these five different projects and their respective organizations, we propose five complementary explanations for the different results.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Center for Bachelor of Engineering Studies, Afdelingen for Produktionsudvikling, Aarhus University
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Number of pages: 19
Access to electricity in rural Africa - from donor support to innovative business models

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
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Title of host publication: Conference proceedings of International Research Network on Organizing by Projects (IRNOP 2017)
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Electronic versions:
IRNOP_2017_Accelerating_time_to_benefit.pdf
Source: PublicationPreSubmission
Source-ID: 130532597
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Accuracy of young male drivers’ self-assessments of driving skill

Accurate self-assessment of skill is important because it creates an appropriate level of confidence and hence behaviour. Inaccurate self-assessment of driving ability has been linked to reckless driving and accidents. Inaccurate self-assessment of driving skills may be a contributing factor to the over-representation of young male drivers in accident statistics. Most previous research on self-assessment of driving skills did not compare self-reported skills to objectively measured driving skills, so the aims of this study were: (1) to test the accuracy of young male drivers’ self-assessments of specific driving skills by comparing them with performance in a driving simulator; (2) to test whether self-assessment accuracy varied with driving skill, driving experience and sensation-seeking propensity. We found that young male drivers’ self-assessments were inconsistent with their driving performance, and that this inconsistency varied with driving skill, driving experience and sensation-seeking propensity. Groups with particularly inaccurate self-assessments are at high risk, because of their relative lack of skill, high mileage and sensation-seeking propensity. Self-assessments of hazard prediction and detection skills were particularly inaccurate. Understanding self-assessments of driving skill is crucial, but further studies are needed to allow preventive policies and interventions to take factors affecting self-assessments into account.

General information
State: Published
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Main Research Area: Technical/natural sciences

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Achieving flexible and sustainable energy systems

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
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Number of pages: 12
Publication date: 2017

Publication information
A choice function hyper-heuristic framework for the allocation of maintenance tasks in Danish railways

A new signalling system in Denmark aims at ensuring fast and reliable train operations, however imposes very strict time limits on recovery plans in the event of failure. As a result, it is necessary to develop a new approach to the entire maintenance scheduling process. In the largest region of Denmark, the Jutland peninsula, there is a decentralised structure for maintenance planning, whereby the crew start their duties from their home locations rather than starting from a single depot. In this paper, we allocate a set of maintenance tasks in Jutland to a set of maintenance crew members, defining the sub-region that each crew member is responsible for. Two key considerations must be made when allocating tasks to crew members. Firstly a fair balance of workload must exist between crew members and secondly, the distance between two tasks in the same sub-region must be minimised, in order to facilitate quick response in the case of unexpected failure. We propose a perturbative selection hyper-heuristic framework to improve initial solutions by reassigning outliers, those tasks that are far away, to another crew member at each iteration, using one of five low-level heuristics. Results of two hyper-heuristics, using a number of different initial solution construction methods are presented over a set of 12 benchmark problem instances.
A configurational analysis of success factors in crowdfunding video campaigns

Recent discussions on success factors on crowdfunding campaigns highlight a plentitude of diverse factors that stem from different, partly contradicting theories. We focus on campaign videos and assume more than one way of creating a successful crowdfunding video. We generate data of 1000 randomly chosen Kickstarter projects from the technology and design domain, and analyze those 715 campaigns that contain a video applying a fuzzy-set configuration analysis. Our results suggest that there are indeed several configurations of elements in videos that are correlated with different levels of success (equifinality) and that conditions leading to success are conceptually different from failure (causal asymmetry).

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Lomberg, C. (Intern), Li-Ying, J. (Intern), Alkærsig, L. (Intern)
Number of pages: 6
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Main Research Area: Technical/natural sciences
Electronic versions:
a1579_2.pdf
Source: PublicationPreSubmission
Source-ID: 142037437
Publication: Research - peer-review › Paper – Annual report year: 2017

Actual preferences for EV households in Denmark and Sweden

Battery electric vehicles (EVs) have received vast attention in the recent decade, especially due to their potential environmental benefits. The car industry has invested huge amounts in the battery electric vehicle technology, leading to a much larger selection of car models with better comfort, driving range and options for recharging the batteries. Several studies have indicated that a great share of car households would now be able to maintain their current mobility patterns with only a minor level of adaption (Christensen 2011; Pearre et al. 2011; Greaves et al. 2014). Still, the driving range of a fully recharged EV is of great importance to the potential users (Jensen et al. 2013; Dimitropoulos et al. 2013; Mabit & Fosgerau 2011; Franke & Krems 2013), but as the battery capacity of the EVs continue to increase, the mobility constraints related to former EV models will most probably be reduced. Thus, the EV alternative has changed from being a product for a very small group of enthusiasts to being an actual car alternative for a common household and knowledge
about which type of households would be interested in EVs is extremely valuable for both industry and policy makers. However, as the EV market is still quite immature in most countries, lack of data on EV users is a common problem for researchers. Data on EV purchase and use have thus often been collected by means of data from intentional statements (see e.g. Bühler et al. 2014), stated preferences (see e.g. Bunch et al. 1993; Hidrue et al. 2011; Jensen et al. 2014) and EV vehicle trials (Golob & Gould 1998; Franke & Krems 2013; Jensen et al. 2014). While such studies have provided important insight into various areas of the EV market, the fact that the results are not based on actual behaviour means that they are subject to a high degree of uncertainty. Being the global EV market forerunner, Norway has a better foundation for studying the EV market based on actual EV owners. On these grounds, Klöckner et al. (2013), studied differences in car use between EV and conventional vehicle (CV) users. Also in Norway, Mersky et al. (2016) and Bjurkan et al. (2016) both studied the effect of policy incentives on EV purchase. Compared to these existing studies, we contribute to the literature with a more advanced model to study the EV market and we focus on the market in Denmark and Sweden. In particular, we use revealed preference information to investigate how household characteristics, attitudes, norms, perceived barriers and perceived functional attributes of the EVs affect the probability of being an EV household. The data utilized in this study was collected in connection with the EU project GREAT, which aims to reduce fossil emissions by improving supply for alternative-fuelled vehicles in northern Europe. Besides detailed individual and household characteristics from a sample of both EV and CV household users, the data contains detailed information on individual determinants of EV adaption based on the Theory of Planned Behaviour (Ajzen 1991). Data were collected through an online survey in Sweden and Denmark. The Swedish study was distributed through different channels including the intranet of regions Skåne and Västra Götaland, different newsletters and EV related facebook groups. In Denmark, EV users were contacted via the infrastructure provider E.ON, while the CV users were contacted through the online panel of the market research institute EPINION. In total 1364 observations are available for Denmark and 1288 for Sweden. Descriptive statistics of the sample show that EV respondents were to a much higher extend male, had a higher household income and higher education level and were more often self-employed, lived less often alone and more often had children compared to CV users. Comparing Tesla users to other EV users, we found that Tesla users perceived less functional barriers in terms of EV usage, had more positive affective attitudes related to driving an EV and felt to a higher degree supported by relevant others to use/buy an EV (subjective norm). Interestingly, they did not report more positive symbolic attitudes in relation to their EV ownership. We modelled the probability of being an EV household with an advanced discrete choice model, taking both household characteristic and the latent determinants of EV adoption into account. A preliminary hybrid choice model with a latent variable for perceived barriers and most relevant household characteristics is presented below for the Danish sample.

**General information**

State: Published  
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Technology and Innovation Management, Newcastle University  
Authors: Jensen, A. F. (Intern), Haustein, S. (Intern), Cherchi, E. (Ekstern), Thorhauge, M. (Intern)  
Number of pages: 4  
Publication date: 2017  
Event: Abstract from The VI European Association for Research in Transportation (hEART) Symposium, Haifa, Israel.  
Main Research Area: Technical/natural sciences  
Electronic versions:  
heART2017_paper_91.pdf  
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017

**Addressing Energy System Modelling Challenges: The Contribution of the Open Energy Modelling Framework (oemof)**

The process of modelling energy systems is accompanied by challenges inherently connected with mathematical modelling. However, due to modern realities in the 21st century, existing challenges are gaining in magnitude and are supplemented with new ones. Modellers are confronted with a rising complexity of energy systems and high uncertainties on different levels. In addition, interdisciplinary modelling is necessary for getting insight in mechanisms of an integrated world. At the same time models need to meet scientific standards as public acceptance becomes increasingly important. In this intricate environment model application as well as result communication and interpretation is also getting more difficult.

In this paper we present the open energy modelling framework (oemof) as a novel approach for energy system modelling and derive its contribution to existing challenges. Therefore, based on literature review, we outline challenges for energy system modelling as well as existing and emerging approaches. Based on a description of the philosophy and elementary structural elements of oemof, a qualitative analysis of the framework with regard to the challenges is undertaken. Inherent features of oemof such as the open source, open data, non-proprietary and collaborative modelling approach are preconditions to meet modern realities of energy modelling. Additionally, a generic basis with an object-oriented implementation allows to tackle challenges related to complexity of highly integrated future energy systems and sets the foundation to address uncertainty in the future. Experiences from the collaborative modelling approach can enrich interdisciplinary modelling activities.

Our analysis concludes that there are remaining challenges that can neither be tackled by a model nor a modelling framework. Among these are problems connected to result communication and interpretation.
A dynamic approach to real-time performance measurement in design projects

Recent developments in engineering design management point to the need for more dynamic, fine-grain measurement approaches able to deal with multi-dimensional, cross-level process performance in product design. Thus, this paper proposes a new approach to the measurement and management of individual and teamwork performance in engineering design projects. This integrates multiple, previously disparate, aspects of design management and performance measurement theory in a single framework. Further, a fully realised performance measurement approach is developed, which complements existing management strategies. This framework is synthesised from an extensive review and illustrated via an in-depth case study. As such, this work contributes to performance measurement theory in engineering design and has significant implications for both engineering design research and industry.
A dynamic programming approach for optimizing train speed profiles with speed restrictions and passage points

This paper considers a novel solution method for generating improved train speed profiles with reduced energy consumption. The solution method makes use of a time-space graph formulation which can be solved through Dynamic Programming. Instead of using uniform discretization of time and space as seen previously in the literature, we rely on an event-based decomposition that drastically reduces the search space. This approach is very flexible, making it easy to handle, e.g., speed limits, changes in altitude, and passage points that need to be crossed within a given time window. Based on solving an extensive number of real-life problem instances, our benchmarks show that the proposed solution method is able to satisfy all secondary constraints and still be able to decrease energy consumption by 3.3% on average compared to a commercial solver provided by our industrial collaborator, Cubris. The computational times are generally very low, making it possible to recompute the train speed profile in case of unexpected changes in speed restrictions or timings. This is a great advantage over static offline lookup tables. Also, the framework is very flexible, making it possible to handle a number of additional constraints on robustness, passenger comfort etc. Selected details of the method and benchmark are only described at a high level for confidentiality reasons.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Cubris ApS
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Pages: 167-182
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Transportation Research Part B: Methodological
Volume: 99
A dynamic programming approach for quickly estimating large network-based MEV models

We propose a way to estimate a family of static Multivariate Extreme Value (MEV) models with large choice sets in short computational time. The resulting model is also straightforward and fast to use for prediction. Following Daly and Bierlaire (2006), the correlation structure is defined by a rooted, directed graph where each node without successor is an alternative. We formulate a family of MEV models as dynamic discrete choice models on graphs of correlation structures and show that the dynamic models are consistent with MEV theory and generalize the network MEV model (Daly and Bierlaire, 2006). Moreover, we show that these models can be estimated quickly using the concept of network flows and the nested fixed point algorithm (Rust, 1987). The main reason for the short computational time is that the new formulation allows to benefit from existing efficient solution algorithms for sparse linear systems of equations. We present numerical results based on simulated data with varying number of alternatives and nesting structures. We estimate large models, for example, a cross-nested model with 200 nests and 500,000 alternatives and 210 parameters that needs between 100–200 iterations to converge (4.3 h on an Intel(R) 3.2 GHz machine using a non-parallelized code). We also show that our approach allows to estimate a cross-nested logit model of 111 nests with a real data set of more than 100,000 observations in 14 h.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Transport DTU, Ecole Polytechnique de Montreal, Universite de Montreal
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BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.57 SJR 2.742 SNIP 2.433
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 3.027 SNIP 2.85 CiteScore 5.15
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 3.007 SNIP 3.022 CiteScore 4.21
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 3.203 SNIP 3.487 CiteScore 4.64
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.226 SNIP 3.162 CiteScore 3.3
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.804 SNIP 3.552 CiteScore 3.82
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.989 SNIP 2.903
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.39 SNIP 2.832
Web of Science (2009): Indexed yes
Ældre kører for stærkt i kendte omgivelser
Risikoen for alvorlig tilskadekomst øges med stigende hastighed, ikke mindst blandt ældre trafikanter. I Australien har en gruppe forskere lavet en undersøgelse der viser, at når ældre overtræder hastighedsgrænserne, sker det typisk i deres eget lokalområde, dvs. på steder de kender godt. Undersøgelsen viste også, at der ikke umiddelbart var sammenhæng mellem de ældres kognitive funktionsniveau og omfanget af hastighedsfortrædelser

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern)
Publication date: 2017

Publication information
Newspaper: Nyhedsbrevet trafiksikkerhedsforskning
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Main Research Area: Technical/natural sciences
Links:
http://www.trafiksikkerhedsforskning.dtu.dk/arkiv/nr-37/aeldre-hastighedsfortraedelser
Publication: Communication › Newspaper article – Annual report year: 2017

A figure may not be worth a thousand words: Principles for a strategic use of visualizations in project and portfolios

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems
Authors: Geraldi, J. (Intern), Arlt, M. (Ekstern)
Publication date: 2017

Host publication information
Title of host publication: The Future of Project Management
Publisher: Roskilde Universitetsforlag
Editors: Hanse, M., Pries-Heje, J.
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Book chapter – Annual report year: 2017

A First Case Study of a Life Cycle-Based Alternatives Assessment (LCAA)
Chemical alternatives assessment (AA) is an emerging screening-level method to replace hazardous chemicals with safer alternatives. Current AA frameworks, however, suffer from gaps in addressing exposure and life cycle impacts, which can
leave trade-offs unidentified. Exposure needs to cover various population groups including workers, consumers and the general public, while life cycle impacts need to focus on categories relevant for a given AA chemical-product application. We systematically define the scope of AA and identify key elements for quantitatively considering exposure and life cycle impacts. Our approach is evaluated in a case study, through which we outline future research needs to fully operationalize a consistent and Life Cycle-based Alternatives Assessment (LCAA). We build on a flexible mass balance-based modeling system yielding cumulative multimedia transfer fractions and exposure pathway-specific Product Intake Fractions defined as chemical mass taken in by humans per unit mass of chemical in a product. When combined with chemical masses in products and further with toxicity information, this approach is a resourceful way to inform AA. Our case study reveals that replacing DEHP by DIHP as vinyl flooring plasticizer shifts from cancer to non-cancer disease burden and shows that plasticizers contribute between 55 and 85% to total toxicity burden from flooring. Comparing toxicity-related outcomes with outcomes from other life cycle impacts emphasizes the relevance of toxicity impacts for this chemical-product application. 

Our results demonstrate (a) how assumptions used in different assessment methods can be aligned in a manner that can avoid contradictory results, (b) how all relevant life cycle impacts can be consistently considered and compared, thereby avoiding burden shifting that could result from disregarding chemical and product life cycles, and (c) how the most relevant impacts across all life cycle stages are prioritized.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Environmental Clarity, University of Michigan
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Pages: 87-87
Publication date: 2017

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Fantke_2017j.pdf
Source: PublicationPreSubmission
Source-ID: 140434848
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A Framework for Determining Product Modularity Levels
The application of modular products is seen as an important enabler for delivering customized products competitively. However, many companies struggle to find ways to implement modular products in a manner that suits their particular business. The literature includes examples of how modular products have been implemented in specific types of companies (mostly mass producers), but little guidance exists on how to identify the right level of modularity for other types of companies (such as engineer-to-order companies). In this article, we address this gap by suggesting a framework that categorizes the different types of modularity, where the categories fit different types of companies. More specifically, we introduce The Modularity Application Matrix – a conceptual tool that leads to a better understanding of partial modularization in relation to products. Through four case studies its application in practice is illustrated. This paper thereby contributes with new theoretical developments as well as a practical tool for practitioners in industries using partial modularization, such as, for example, the construction and building industry.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management, Department of Mechanical Engineering, Engineering Design and Product Development, NCC Construction Danmark A/S, University of Southern Denmark
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Pages: 1-14
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A Framework for International Location Decisions for Manufacturing Firms Published in Production Engineering

The purpose of this paper is to address current shortcomings in international location decisions (ILD), which were identified through an exploratory study, by developing a model that addresses previous limitations in research and encapsulate an adequate theories and frameworks. Based on insights from an exploratory study on 17 Danish manufacturing firms and a literature review of over a hundred publications, the Scope Model was developed with the MECE principles in mind in order to encompass all aspects as identified, while being supplemented by adequate tools and models in different phases of the ILD process. This paper presents an application-oriented model for facilitating ILDs in manufacturing firms, which is unique in its way of being exhaustive and yet able to decompose the ILD problem in different aspects and abstraction levels to assist firms in balancing and aligning their efforts with strategic goals and organizational values.

General information
State: Accepted/In press
Organisations: Office for Study Programmes and Student Affairs, Department of Management Engineering, Management Science, Operations Management, Technical University of Denmark
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Scopus rating (2014): SJR 0.723 SNIP 1.404 CiteScore 1.09
Scopus rating (2013): SJR 0.695 SNIP 1.205 CiteScore 1
ISI indexed (2013): ISI indexed no
Scopus rating (2012): SJR 0.985 SNIP 1.649 CiteScore 1.07
ISI indexed (2012): ISI indexed no
Scopus rating (2011): SJR 1.067 SNIP 1.747 CiteScore 1.1
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 0.684 SNIP 1.386
Scopus rating (2009): SJR 0.426 SNIP 1.204
Original language: English
Publication: Research - peer-review › Journal article – Annual report year: 2017
A Framework for Operational Due Diligence in Mergers and Acquisitions
The number of mergers and acquisitions (M&As) has over the last five years increased greatly (Institute of Mergers, Acquisitions and Alliances, 2016). Furthermore, private equity professionals point to operational performance gains to drive an acquisition decision and attribute cost reductions as the most important lever for value creation, after a private equity firm acquires a company (PwC, 2016). However, the overall success rate of M&A activity remains low and the approach to understand an acquisition target’s operating model remains non-exhaustive and unstandardized. This paper investigates the pivotal determinants for assessing operational performance and identifying improvement potentials in an acquisition target. The research question is: “What are the fundamental operational determinants influencing the acquisition decision for private equity firms in the due diligence phase?” This paper presents an end-to-end framework which functions as a dynamic platform that simplifies the approach to conducting an operational due diligence (ODD). The framework focuses on identification and assessment of current operational performance and improvement drivers in the pre-acquisition phase.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management, Implement Consulting Group, Valcon Consulting
Authors: Porsgaard, C. B. (Ekstern), Haubjerg, M. (Ekstern), Herbert-Hansen, Z. N. L. (Intern)
Publication date: 2017
Event: Paper presented at The 24th International Annual EurOMA Conference, Edingburgh, United Kingdom.
Main Research Area: Technical/natural sciences
Additional files:
Full abstract
Publication: Research - peer-review › Paper – Annual report year: 2017

A framework of knowledge creation processes in participatory simulation of hospital work systems
Participatory simulation (PS) is a method to involve workers in simulating and designing their own future work system. Existing PS studies have focused on analysing the outcome, and minimal attention has been devoted to the process of creating this outcome. In order to study this process, we suggest applying a knowledge creation perspective. The aim of this study was to develop a framework describing the process of how ergonomics knowledge is created in PS. Video recordings from three projects applying PS of hospital work systems constituted the foundation of process mining analysis. The analysis resulted in a framework revealing the sources of ergonomics knowledge creation as sequential relationships between the activities of simulation participants sharing work experiences; experimenting with scenarios; and reflecting on ergonomics consequences. We argue that this framework reveals the hidden steps of PS that are essential when planning and facilitating PS that aims at designing work systems.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology
Authors: Andersen, S. N. (Intern), Broberg, O. (Intern)
Number of pages: 40
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Ergonomics
ISSN (Print): 0014-0139
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.8 SJR 0.913 SNIP 1.358
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.971 SNIP 1.447 CiteScore 1.83
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.921 SNIP 1.455 CiteScore 1.77
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.831 SNIP 1.405 CiteScore 1.91
Aggregated Exposure Estimates for Fine Particulate Matter from Indoor and Outdoor Sources - and beyond

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Michigan, California Institute of Technology, University of California at Berkeley, Institute of Occupational Medicine
Authors: Fantke, P. (Intern), Jolliet, O. (Ekstern), Hodas, N. (Ekstern), Apte, J. S. (Ekstern), Loh, M. (Ekstern), McKone, T. E. (Ekstern)
Publication date: 2017

Host publication information
Title of host publication: Abstract book - IPXII
Main Research Area: Technical/natural sciences
Conference: Inhaled Particles XII (IPXII) 2017, Glasgow, United Kingdom, 25/09/2017 - 25/09/2017
Source: PublicationPreSubmission
Source-ID: 140434778
Publication: Research › Conference abstract in proceedings – Annual report year: 2017

Agil Stage-Gate®: ny model for udviklingsprojekter i mellemstore virksomheder

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Gemba Innovation A/S, Dansk Industri
A hybrid Constraint Programming/Mixed Integer Programming framework for the preventive signaling maintenance crew scheduling problem

A railway signaling system is a complex and interdependent system which should ensure the safe operation of trains. We introduce and address a mixed integer optimisation model for the preventive signal maintenance crew scheduling problem in the Danish railway system. The problem contains many practical constraints, such as temporal dependencies between crew schedules, the splitting of tasks across multiple days, crew competency requirements and several other managerial constraints. We propose a novel hybrid framework using Constraint Programming (CP) to generate initial feasible solutions to feed as ‘warm start’ solutions to a Mixed Integer Programming (MIP) solver for further optimisation. We apply the CP/MIP framework to a section of the Danish rail network and benchmark our results against both direct application of a MIP solver and modelling the problem as a Constraint Optimisation Problem (COP). Whereas the current practice of using a general purpose MIP solver is only able to solve instances over a two-week planning horizon, the hybrid framework generates good results for problem instances over an eight-week period. In addition, the use of a MIP solver to improve the initial solutions generated by CP is shown to be vastly superior to solving the problem as a COP.

General information
State: Accepted/In press
Organisations: Management Science, Department of Management Engineering, Operations Research, Queen Mary University of London, Banedanmark
Authors: Pour, S. M. (Intern), Drake, J. H. (Ekstern), Ejlertsen, L. S. (Ekstern), Rasmussen, K. M. (Intern), Burke, E. K. (Ekstern)
Air Quality Monitoring System and Benchmarking

Air quality monitoring has become an integral part of smart city solutions. This paper presents an air quality monitoring system based on Internet of Things (IoT) technologies, and establishes a cloud-based platform to address the challenges related to IoT data management and processing capabilities, including data collection, storage, analysis, and visualization. In addition, this paper also benchmarks four state-of-the-art database systems to investigate the appropriate technologies for managing large-scale IoT datasets.

A Joint Route Choice Model for Electric and Conventional Car Users

Introduction

Worldwide, governments have committed to reducing air pollution and carbon emissions. With a higher share of renewable sources in the electricity production, battery electric cars (EVs) could play a significant role in maintaining these commitments. Growing literature shows an increasing interest in EVs and their market, but current EV travel demand studies are usually based on data collected from users of conventional gasoline or diesel engine cars (CVs) (see e.g. (Golob and Gould 1998; Pearre et al. 2011; Greaves et al. 2014). EVs are however different from CVs in a number of ways, in particular when it comes to the driving range and the refuelling/recharging which can lead to behavioural changes (Jensen and Mabit 2015). EV users might avoid longer and less-planned trips and, when deciding on a route, they might select roads where the general speed is lower, the trip length is shorter, or the charging facilities are better. On the other hand, over a longer period of time, many users do not need charging other than overnight charging at home in order to keep up with their current behaviour (Christensen et al. 2010). Thus, the impact on traffic of a large scale EV adoption is not obvious, as it cannot be assumed that CVs currently on the road are simply replaced by EVs and individual behaviour otherwise stays constant.

Understanding the behaviour of EV users is important in a number of ways. Beside potential environmental effects, there is a need to understand other related effects, such as effects on the electricity network and the transport network. The objective of this study is to use revealed preferences (RP) data to investigate differences in route choice behaviour between CV and EV users. To our knowledge, this is the first time that a state-of-the-art route choice model has been estimated on RP EV data. In addition, the level of detail in the data allows for accounting for congestion, reliability, topology, weather and socioeconomic background.

Method

This study exploits a unique and vast dataset consisting of GPS records from a large demonstration project about EVs conducted in Denmark during the period 2011-2013. Households participating in the trial had an EV available for a period
of three months during which all trips were GPS logged. Additionally, some of the households GPS logged trips by their CV in the month before and the month after the EV was received. The GPS traces were matched to the very detailed NAVTEQ street network (NAVTEQ 2010). The high level of detail of the network is crucial, as EV users might use smaller roads with lower speeds in order to save energy due to current technological restrictions on driving distances. Following the procedure in Prato et al. (2014), route choice behaviour is modelled with a two-stage approach consisting of choice set generation and model estimation. The first stage used a doubly stochastic generation process to generate a choice set consisting of a maximum of 100 unique alternatives for each observed route. Subsequently, the observations were filtered to exclude observations for which the choice set contained only one alternative route or did not contain any alternative reasonably similar to the observed route. In the second stage, a mixed path size correction logit model was estimated for modelling route choice behaviour, (Bovy et al. 2008). Comparison of EV and CV preferences is made possible by estimating jointly across data from each technology using a logit scaling approach with at least one generic parameter across data (Bradley and Daly 1997).

Data

After the map matching and filtering processes, GPS records were available for about 90,000 EV trips from 379 households. About 6,500 CV trips were logged for about 100 households in the month before and after the EV was used. The sample of households was based on voluntary participation under the condition that the household already owned at least one car and had a dedicated parking space where the EV could be home charged. In the trial period, the household had access to both their CV and EV, but they were encouraged to use the EV as the primary option. The participating households resided in 27 of the 98 municipalities in Denmark and were distributed across the entire country (see Figure 1). For trial participation purposes, one household member filled an online application form with information about the household and its composition. Each trip has been merged with weather information from local weather stations, inducing that information about precipitation, wind speed, temperature and visibility at the time of departure is available. The NAVTEQ network consists of 636,243 links covering the entire country and all road classes from large highways to minor local roads.

General information

State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Queensland
Authors: Jensen, A. F. (Intern), Rasmussen, T. K. (Intern), Prato, C. G. (Ekstern)
Publication date: 2017
Event: Abstract from V International Choice Modeling Conference (ICMC), Cape Town, South Africa.
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017

A life cycle assessment of poly-hydroxybutyrate extraction from microbial biomass using dimethyl carbonate

Poly-hydroxyalkanoates are an example of biodegradable and biocompatible polymers, produced from renewable raw materials. With respect to other bioplastics the market share of poly-hydroxyalkanoates is still limited because of their commercial costs. To develop more cost-effective processes, a multilevel approach is usually undertaken combining innovative, cheaper and more effective microbial cultivation with safe and cheap extraction and purification methodologies. This study assesses the potential life cycle environmental impacts related to a novel protocol poly-hydroxyalkanoates extraction based on dimethyl carbonate in comparison to the use of halogenated hydrocarbons (in particular 1,2 dichloroethane). Four scenarios are analysed for the dimethyl carbonate protocol considering: extraction from microbial slurry or from dried biomass, and recovery by solvent evaporation or polymer precipitation. The life cycle assessment demonstrates that the environmental performances of dimethyl carbonate-based protocols are far better than those of the most comparative process using the halogenated hydrocarbons. The scenario that foresees the extraction of dried biomass and recovers solvent by evaporation appears to be the most promising in terms of environmental sustainability performance.
A matheuristic approach for solving the Integrated Timetabling and Vehicle Scheduling Problem

The Integrated Timetabling and Vehicle Scheduling Problem (IT-VSP) is a generalization of the well-known Vehicle Scheduling Problem (VSP). In the IT-VSP the trips in the original timetables may be modified in terms of arrival and departure times in order to minimize a new objective function that considers both operational costs and passenger transfer costs. Starting from a base timetable, the allowed modifications include shifting the departure time from the first station of each trip and also the extension of dwell times at important stops where large flows of passengers are expected to transfer between different trips. We consider transfers between bus trips scheduled by the model, but also transfers to other fixed lines that intersect the lines considered in the IT-VSP. We present a MIP formulation of the IT-VSP able to solve small instances of the problem, and a matheuristic approach that uses the compact MIP to solve larger instances of the problem. The idea is to iteratively solve restricted versions of the MIP selecting at each step a subset of trips where modifications are allowed, while all other trips remain fixed. The performance of the proposed matheuristic is shown on a case study with real-life instances provided by the main service provider in the greater Copenhagen area. The effect of allowing dwell times is compared to previous approaches to the problem where trips are only allowed to be shifted in time.

General information
State: Published
Authors: Fonseca, J. F. P. (Intern), Larsen, A. (Intern), van der Hurk, E. (Intern), Repke, S. (Intern), Roberti, R. (Ekstern)
Publication date: 2017
Main Research Area: Technical/natural sciences

A matheuristic for the Cargo Mix Problem with Block Stowage

The cargo-mix problem aims at selecting the amount of containers of a given type to load on a vessel. In this article we present an extended definition that includes the analysis of a circular route with draft restrictions, limitations on expected cargo and the use of a block stowage strategy. A compact formulation of the problem based on the state-of-the-art heuristic decomposition is shown not to be able to solve the extended problem, thus a matheuristic approach is presented that can achieve high quality results in a matter of seconds.

General information
State: Published
Organisations: Department of Management Engineering, Management Science
Authors: Christensen, J. M. (Intern), Pacino, D. (Intern)
Pages: 151-171
Publication date: 2017
Main Research Area: Technical/natural sciences
A method for Effect Modifier Assessment in ergonomic intervention research – The EMA method

Purpose: Intervention research includes studies in which researchers arrange (or follow) changes in working conditions to determine the effects on risk factor, health and/or performance. Often this research takes place at workplaces and not in a controlled laboratory environment. Effects may thus be due to other factors in addition to the intervention – i.e. effect modifiers. These need to be identified and assessed in terms of potential impact on studied outcomes before proper inference can be drawn. We present a method to estimate potential effects of modifiers in intervention research.

Methodology: The EMA method is a type of group interview including 3-6 employees representing the occupational groups in the investigated organization. With reference to the investigated period they are asked to recall important changes/events in and around the organization; 1) in general, 2) in work processes and equipment and 3) regarding their work environment. In each step the participants write their individual answers on post-it notes which are then discussed in plenum, one at a time, and placed on a timeline. All identified events are assessed as due to the investigated intervention(s) or other causes (“effect modifiers”). Their impact on the outcomes is estimated by triangulation. Following the workshop, events are entered into a database and analyzed. Results: Preliminary evaluations of the method suggest that it offers a relevant overview of potential effect modifiers. Limitations: Further validation is needed. Implications: Using the EMA-method seems to facilitate proper inference regarding the impact of a workplace intervention. Originality: The EMA-method is a novel and systematic approach to estimate potential effect modifiers.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, University of Gothenburg
Authors: Edwards, K. (Intern), Winkel, J. (Intern)
Publication date: 2017
Event: Abstract from European Association of Work and Organizational Psychology, Dublin, Ireland.
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017

A multiple ship routing and speed optimization problem under time, cost and environmental objectives

The purpose of this paper is to investigate a multiple ship routing and speed optimization problem under time, cost and environmental objectives. A branch and price algorithm as well as a constraint programming model are developed that consider (a) fuel consumption as a function of payload, (b) fuel price as an explicit input, (c) freight rate as an input, and (d) in-transit cargo inventory costs. The alternative objective functions are minimum total trip duration, minimum total cost and minimum emissions. Computational experience with the algorithm is reported on a variety of scenarios.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Transport DTU, Xi'an Jiaotong–Liverpool University, Liverpool John Moores University
Analysing improvements to on-street public transport systems: a mesoscopic model approach

Light rail transit and bus rapid transit have shown to be efficient and cost-effective in improving public transport systems in cities around the world. As these systems comprise various elements, which can be tailored to any given setting, e.g. pre-board fare-collection, holding strategies and other advanced public transport systems (APTS), the attractiveness of such systems depends heavily on their implementation. In the early planning stage it is advantageous to deploy simple and transparent models to evaluate possible ways of implementation. For this purpose, the present study develops a mesoscopic model which makes it possible to evaluate public transport operations in details, including dwell times, intelligent traffic signal timings and holding strategies while modelling impacts from other traffic using statistical distributional data thereby ensuring simplicity in use and fast computational times. This makes it appropriate for analysing the impacts of improvements to public transport operations, individually or in combination, in early planning stages. The paper presents a joint measure of reliability for such evaluations based on passengers’ perceived travel time by considering headway time regularity and running time variability, i.e. taking into account waiting time and in-vehicle time. The approach was applied on a case study by assessing the effects of implementing segregated infrastructure and APTS elements, individually and in combination. The results showed that the reliability of on-street public transport operations mainly depends on APTS elements, and especially holding strategies, whereas pure infrastructure improvements induced travel time reductions. The results further suggested that synergy effects can be obtained by planning on-street public transport coherently in terms of reduced travel times and increased reliability.

General information

State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, COWI A/S
Authors: Ingvarsson, J. B. (Intern), Kornerup Jensen, J. (Ekstern), Nielsen, O. A. (Intern)
Pages: 385-409
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information

Journal: Public Transport
Volume: 9
Issue number: 1-2
ISSN (Print): 1866-749X
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
Scopus rating (2016): CiteScore 1.8 SJR 0.832 SNIP 1.669
Scopus rating (2015): SJR 1.287 SNIP 1.708 CiteScore 1.98
Scopus rating (2014): SJR 0.882 SNIP 0.939 CiteScore 1.26
Scopus rating (2013): SJR 0.757 SNIP 0.861 CiteScore 1.03
Scopus rating (2012): SJR 1.017 SNIP 1.001 CiteScore 0.96
Scopus rating (2011): SJR 1.214 SNIP 1.783 CiteScore 1.26
Scopus rating (2010): SJR 0.582 SNIP 0.759
Original language: English
Electronic versions:
Manuscript_Mesoscopic_modelling_of_on_street_public_transport_Revision2_v5.pdf. Embargo ended: 14/02/2018
DOIs:
10.1007/s12469-016-0151-x
Publication: Research - peer-review › Journal article – Annual report year: 2017

An Empirical Comparison of Algorithms to Find Communities in Directed Graphs and Their Application in Web Data Analytics

Detecting communities in graphs is a fundamental tool to understand the structure of Web-based systems and predict their evolution. Many community detection algorithms are designed to process undirected graphs (i.e., graphs with bidirectional edges) but many graphs on the Web-e.g., microblogging Web sites, trust networks or the Web graph itself-are often directed. Few community detection algorithms deal with directed graphs but we lack their experimental comparison. In this paper we evaluated some community detection algorithms across accuracy and scalability. A first group of algorithms (Label Propagation and Infomap) are explicitly designed to manage directed graphs while a second group (e.g., WalkTrap) simply ignores edge directionality; finally, a third group of algorithms (e.g., Eigenvector) maps input graphs onto undirected ones and extracts communities from the symmetrized version of the input graph. We ran our tests on both artificial and
real graphs and, on artificial graphs, WalkTrap achieved the highest accuracy, closely followed by other algorithms; Label Propagation has outstanding performance in scalability on both artificial and real graphs. The Infomap algorithm showcased the best trade-off between accuracy and computational performance and, therefore, it has to be considered as a promising tool for Web Data Analytics purposes.

**General information**

**State:** Published  
**Organisations:** Department of Management Engineering, Engineering Systems, University of Messina, Mediterranea University of Reggio Calabria, Luleå University of Technology  
**Authors:** Agreste, S. (Ekstern), De Meo, P. (Ekstern), Fiumara, G. (Ekstern), Piccione, G. (Ekstern), Piccolo, S. (Intern), Rosaci, D. (Ekstern), Sarne, G. M. L. (Ekstern), Vasilakos, A. V. (Ekstern)  
**Pages:** 289-306  
**Publication date:** 2017  
**Main Research Area:** Technical/natural sciences

**Publication information**

**Journal:** IEEE Transactions on Big Data  
**Volume:** 3  
**Issue number:** 3  
**ISSN (Print):** 2332-7790  
**Original language:** English  
**Web data analytics, Graph analytics, Community detection and clustering, Directed graphs**  
**DOIs:**  
10.1109/TBDATA.2016.2631512  
**Source:** FindIt  
**Source-ID:** 2373592459  
**Publication:** Research - peer-review › Journal article – Annual report year: 2017

**Anger expression among Danish cyclists and drivers: A comparison based on mode specific anger expression inventories**

Based on the short form of the driving anger expression inventory (DAX-short, 15-item), the present study developed an adapted version of the DAX for cyclists (CAX, 14 items). The data basis was an online survey of 2000 inhabitants of Denmark. A principle component analysis on the translated DAX-short confirmed the 4-factor solution of the original study differentiating between (1) personal physical aggressive expression, (2) use of a vehicle to express anger, (3) verbal aggressive expression and (4) adaptive/constructive expression. In case of cycling, the factor "use of a vehicle to express anger" only included one item and was left out. Based on the results, reliable subscales were developed. Drivers scored higher in verbal aggressive expression than cyclists, while there was no significant difference in constructive expression. The subscales for drivers and cyclists showed significant relations to age, gender, self-reported aggressive behaviours and traffic fines: Women scored for instance lower in physical expression, while older people scored higher in constructive expression. The effect of age and gender on anger expression among drivers and cyclists remained significant when controlling for exposure and other factors in linear regression analyses. These analyses also showed a relationship between a positive attitude towards driving and higher levels of anger expression among drivers, while this was not the case for cyclists.

**General information**

**State:** Published  
**Organisations:** Department of Management Engineering, Technology and Innovation Management, Transport DTU  
**Authors:** Møller, M. (Intern), Haustein, S. (Intern)  
**Pages:** 354-360  
**Publication date:** 2017  
**Main Research Area:** Technical/natural sciences

**Publication information**

**Journal:** Accident Analysis and Prevention  
**Volume:** 108  
**ISSN (Print):** 0001-4575  
**Ratings:**  
BFI (2018): BFI-level 2  
Web of Science (2018): Indexed yes  
BFI (2017): BFI-level 2  
Web of Science (2017): Indexed yes  
BFI (2016): BFI-level 2  
Scopus rating (2016): CiteScore 3.24 SJR 1.49 SNIP 1.97  
Web of Science (2016): Indexed yes
An Integrated Framework for Life Cycle Engineering

Life Cycle Engineering (LCE) was introduced as a concept more than 24 years ago in order to address emerging concerns about environmental sustainability in engineering. A number of methods and tools have been introduced to operationalise the LCE concept, but since then, the scope of sustainability has broadened, and as a result, LCE has evolved in parallel with other disciplines with similar aims. Currently, in addition to LCE, there exist a number of concepts such as Industrial Ecology, Cleaner Production, Life Cycle Management (LCM), Industrial Symbiosis, and Circular Economy. As a result, orientation becomes challenging and a framework to integrate them is required. The paper aims to introduce an integrated...
framework for LCE defining the concept and its boundaries, and it argues for the need to reorientate LCE towards the environmental dimension of sustainability. Through an integrated top-down and bottom-up approach, the framework establishes a relationship between LCE and the other concepts and positions them relative to the planetary boundaries and the concept of absolute environmental sustainability. (C) 2017 The Authors. Published by Elsevier B.V.

An Integrated Process and Digitalization Perspective on the Shipping Supply Chain – a Literature Review

The maritime transport industry operates in an environment characterized by fluctuating fuel prices and low freight rates in a dynamic competitive market. Shipping companies must therefore adopt responsive supply chains whilst containing costs. This study investigates what extant literature can offer from an integrated digitalization and business process management perspective to enhance supply chain performance for shipping companies. The main themes identified in literature have been categorized according to their contributions to achieving responsive and efficient supply chains. Furthermore, the drivers of enhanced supply chain performance have been identified and an agenda for future research is proposed. This study therefore contributes to the research field of maritime transport by enfolding extant literature and guiding decision makers in their efforts to achieve responsive and adaptive shipping supply chains.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Transport DTU, Operations Management
Authors: Feibert, D. C. (Intern), Hansen, M. S. (Intern), Jacobsen, P. (Intern)
Number of pages: 5
Publication date: 2017

Host publication information
Title of host publication: 2017 IEEE International Conference on Industrial Engineering and Engineering Management
Main Research Area: Technical/natural sciences
Conference: 2017 International Conference on Industrial Engineering and Engineering Management (IEEM), Suntec City, Singapore, 10/12/2017 - 10/12/2017
A note on identification in discrete choice models with partial observability

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Transport DTU
Authors: Ranjan, A. (Intern), Fosgerau, M. (Intern)
Number of pages: 11
Publication date: 2017

A Novel Smart Meter Controlling System with Dynamic IP Addresses
Smart meters are the electronic devices for measuring energy consumption in real time. Usually, static public IP addresses are allocated to realize the point-to-point (P2P) communication and remote controlling for smart metering systems. This, however, restricts the wide deployment of smart meters, due to the deficiency of public IP resources. This paper proposes a novel subscription-based communication architecture for the support of dynamic IP addresses and group controlling of smart meters. The paper evaluates the proposed architecture by comparing the traditional P2P architecture, and validate its effectiveness to interact with smart meters.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Sam Ratulangi University, De La Salle University-Manila
Authors: Manembu, P. (Ekstern), Welang, B. (Ekstern), Kalua Lapu, A. (Ekstern), Kewo, A. (Intern), Nielsen, P. S. (Intern), Liu, X. (Intern)
Pages: 1465-1470
Publication date: 2017

A Polynomial Estimate of Railway Line Delay
Railway service may be measured by the aggregate delay over a time horizon or due to an event. Timetables for railway service may dampen aggregate delay by addition of additional process time, either supplement time or buffer time. The evaluation of these variables has previously been performed by numerical analysis with simulation. This paper proposes an analytical estimate of aggregate delay with a polynomial form. The function returns the aggregate delay of a railway line resulting from an initial, primary, delay. Analysis of the function demonstrates that there should be a balance between the two remedial measures, supplement and buffer. Numerical analysis of a Copenhagen Sbane line shows that the polynomial function is valid even when theoretical assumptions are violated.

General information
Application of Product Configuration Systems in Engineering Companies

Engineering companies increasingly face the challenge of delivering highly customized products where time, cost, and quality are critical factors. To provide customized products efficiently, a product configuration system (PCS) is commonly implemented. A PCS supports the product configuration process, which consists of activities that involve gathering requirements from customers and generating the required product-related specifications. The application of a PCS in the industry has revealed benefits that include shorter lead-times, improved quality of specifications and products, and lower overall cost of the product. However, many PCS projects do encounter failure. With an increased focus on customized and personalized products, there is a growing need for the automation of business processes. For this reason, a PCS is becoming an essential part of IT strategy in different industries. With this point in mind, it is necessary to analyse how to facilitate a successful PCS application in engineering companies that make highly customized and complex products. The objective of the PhD project is to facilitate a successful PCS application in engineering companies by providing theoretical and empirical based evidence of the impact from PCS applications and by suggesting methods to improve the implementation, development and maintenance of the PCS. More specifically, this project considers the main benefits and challenges related to implementing and utilising PCS. Additionally, this project takes into account identification and evaluation of PCS applications. Furthermore, the project focuses on improved development and maintenance of PCS projects by considering knowledge management and product modelling. Finally, possibilities for integrating with IT systems to retrieve product information in the configuration process are explored to increase performance and accuracy of the PCS. This study focuses on engineering companies and aims to (1) strengthen the research field of PCS applications and (2) increase the successfullness of engineering companies in applying the PCS in terms of both successful implementation and benefits realization to greater extent. The findings presented in this PhD thesis contain empirical evidence gathered through case studies and surveys.
Applying boundary objects to create coherence between management decisions regarding prevention of Musculoskeletal Disorders and implemented changes

Purpose. This study aims to support social healthcare workplaces with methods to establish coherence between management decisions regarding prevention of Musculoskeletal Disorders (MSD) and the work-related preventive changes implemented in the organization. The study builds on the known risk factors for developing MSD in combination with the theory of explication of tacit knowledge by the use of boundary objects (Carlile, 2002). Design/Methodology. Searching the literature of visual knowledge generating methods, we selected those who focus on the work process and relate to one or more of the risk factors of MSD. The search resulted in the following methods: Workbooks, Photo-Safari, Layout Games, Employee Exchange, Videos and the Fishbone workshop. Three Occupational Health and Safety Departments in municipalities and one hospital tested the methods, which several public workplaces will apply starting January 2017. Results. The identified visualization methods each addresses specific risk factors of MSD but when combined, they provide a holistic insight into the work-related causes to MSD at the workplace. The new knowledge forms the basis for focused work-related preventive changes. The test participants found the methods applicable in relation to create coherence between strategy and practice. Research implications: Our preliminary results imply that visualization methods can generate new knowledge about work-related causes to MSD, identification of new preventive changes and how they link to the preventive MSD strategy. Originality/Value. The study investigates the application of boundary objects in the identification of causes and implementation of a preventive MSD strategy and work-related changes.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Ipsen, C. (Intern), Edwards, K. (Intern), Poulsen, S. (Intern), Seim, R. (Intern)
Publication date: 2017
Event: Abstract from European Association of Work and Organizational Psychology, Dublin, Ireland.
Main Research Area: Technical/natural sciences
Electronic versions:
EAWOP_abstract_final_27.09.16_DTU.pdf
Source: PublicationPreSubmission
Source-ID: 132361670
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017
Applying LCA in decision making - the need and the future perspective

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Department of Civil Engineering, Centre for oil and gas – DTU, Transport DTU, Transport Modelling, Department of Applied Mathematics and Computer Science, Statistics and Data Analysis, Department of Environmental Engineering, Urban Water Systems, National Food Institute, Research Group for Genomic Epidemiology, Section for Structural Engineering
Authors: Dong, Y. (Intern), Miraglia, S. (Intern), Manzo, S. (Intern), Georgiadis, S. (Intern), Sørup, H. J. D. (Intern), Boriani, E. (Intern), Hald, T. (Intern), Thøns, S. (Intern), Hauschild, M. Z. (Intern)
Number of pages: 1
Publication date: 2017
Main Research Area: Technical/natural sciences
Electronic versions:
AbstraApplying_LCA_in_policy_deciison_making_Final

Applying lean thinking to risk management in product development
This paper re-conceptualizes risk management (RM) in product development (PD) through a lean thinking perspective. Arguably, risk management in PD projects became a victim of its own success. It is often implemented as a highly formalized, compliance driven activity, ending up disconnected from the actual value creation of the engineering task. Cost overrun, delay and low quality decision making is common in product development processes even if RM processes are in place. Product development is about reaching project objectives by gradually reducing uncertainty, but often fail to do so without delay or cost overrun. This paper explores the relationship between product development and risk management and proposes to make RM an integrated value adding part of PD. Through a literature review we identify the potential of re-conceptualizing RM through lean thinking. We then conceptualize an outline of how one could apply lean thinking to RM to create a simple, value focused and consensus forming perspective on how to make RM a meaningful part of PD.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Norwegian University of Science and Technology, Politecnico di Milano
Authors: Willumsen, P. L. (Intern), Oehmen, J. (Intern), Rossi, M. (Ekstern), Welo, T. (Ekstern)
Pages: 269-278
Publication date: 2017
Host publication information
Publisher: Design Society
Main Research Area: Technical/natural sciences
Electronic versions:
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

A Quantitative Property-Property Relationship for Estimating Packaging-Food Partition Coefficients of Organic Compounds
Organic chemicals encapsulated in beverage and food packaging can migrate to the food and lead to human exposures via ingestion. The packaging-food (Kpf) partition coefficient is a key parameter to estimate the chemical migration from packaging materials. Previous studies have simply set Kpf to 1 or 1000, or provided separate linear correlations for several discrete values of ethanol equivalencies of food simulants (EtOH-eq). The aim of the present study is to develop a single quantitative property-property relationship (QPPR) valid for different chemical-packaging combinations and for water or different EtOHeq values. We compiled datasets of measured Kpf from 3 studies, which contained 302 data points of 152 chemicals in LDPE and HDPE (low and high density polyethylene) at 25 °C for EtOH-eq values ranging from 0% (water) to 95%. A multiple linear regression (MLR) model was developed to predict Kpf as a function of the chemical’s Kow, the EtOH-eq, the packaging type and an interaction term between Kow and EtOH-eq. The model shows good fitting performance of the experimental datasets with adjusted R-square of 0.92. All predictors are highly significant except the
packaging type, probably because only two packaging types are included. This preliminary QPPR demonstrates that the Kpf for various chemical-packaging-food combinations can be estimated by a single linear correlation. Based on more than 1000 collected Kpf in 15 materials, we will present extensive results for other packaging types and different temperatures. This QPPR provides a comprehensive correlation method to estimate the Kpf for a wide range of chemical-packaging-food combinations, and thus facilitate high-throughput estimates of human exposures to chemicals encapsulated in food contact materials.

**General information**

State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Quantis, University of Michigan, University of Michigan-Dearborn
Authors: Huang, L. (Ekstern), Ernstoff, A. (Ekstern), Xu, H. (Ekstern), Lu, S. (Ekstern), Fantke, P. (Intern), Jolliet, O. (Ekstern)
Pages: 69-69
Publication date: 2017

**Host publication information**

Title of host publication: Abstract book - ISES 27th Annual Meeting
Article number: MO-PL-E2-115
Main Research Area: Technical/natural sciences
Conference: 27th Annual meeting of the International Society of Exposure Science, Research Triangle Park, United States, 15/10/2017 - 15/10/2017

**Archiving energy technology optimisation models**

**General information**

State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Grohnheit, P. E. (Intern)
Number of pages: 23
Publication date: 2017

**Publication information**

Media of output: Power Point Presentation
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Milano_Transition_Grohnheit_2017_11_30.pptx
Source: PublicationPreSubmission
Source-ID: 140594740
Publication: Research - peer-review › Sound/Visual production (digital) – Annual report year: 2017

**A research agenda for a people-centred approach to energy access in the urbanizing global south**

Energy access is typically viewed as a problem for rural areas, but people living in urban settings also face energy challenges that have not received sufficient attention. A revised agenda in research and practice that puts the user and local planning complexities centre stage is needed to change the way we look at energy access in urban areas, to understand the implications of the concentration of vulnerable people in slums and to identify opportunities for planned management and innovation that can deliver urban energy transitions while leaving no one behind. Here, we propose a research agenda focused on three key issues: understanding the needs of urban energy users; enabling the use of context-specific, disaggregated data; and engaging with effective modes of energy and urban governance. This agenda requires interdisciplinary scholarship across the social and physical sciences to support local action and deliver large-scale, inclusive transformations.

**General information**

State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, University of Sheffield, University College London, Loughborough University, University of York
Authors: Broto, V. C. (Ekstern), Stevens, L. (Ekstern), Ackom, E. (Intern), Tomei, J. (Ekstern), Parikh, P. (Ekstern), Bisaga, I. (Ekstern), To, L. S. (Ekstern), Kirshner, J. (Ekstern), Mulugetta, Y. (Ekstern)
Pages: 776-779
A review of biogas applications across continents - Case study of Thailand, Ghana & Denmark.
This paper analyses the biogas development within Ghana, Thailand and Denmark to shed light on the different development patterns and future trends that is seen within the biogas sector. Literature review in the form of journal articles and reports is assessed, interviews with agricultural and biogas experts - as well as policy makers within the field of renewable energy - is being conducted. The biogas technology was analysed according to ‘historical development’, ‘feedstock utilization’ and ‘future development’. As far as the future prospects for the biogas technology the paper concludes, that large public support in the form of governmental grants and development aid has shaped the current platform for the technologies within all three countries, and that continuous support are needed. This is especially required in Ghana, where the need for finance and appropriate policy frameworks are required to move forward. Thailand and Denmark has set up support programs and emphasized on using industrial organic feedstock for biogas production, and Denmark has formulated political targets for utilizing organic household waste as biogas feedstock. For all three countries apply, despite their differences, that large unused feedstock potentials are identified, especially within the agricultural sector (e.g. livestock manure & crop residues), showing that this part of the biogas feedstock must be emphasised more strongly in the future to fully utilize its potentials.

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, Kwame Nkrumah University of Science and Technology, Roskilde University
Authors: Lybæk, R. (Forskerdatabase), Ackom, E. (Intern), Bensah, E. C. (Ekstern)
Number of pages: 6
Publication date: 2017
Main Research Area: Technical/natural sciences
Electronic versions:
GMSARN2017_E_30.pdf
Source: PublicationPreSubmission
Source-ID: 142323682
Publication: Research - peer-review › Paper – Annual report year: 2018

A review of models for near-field exposure pathways of chemicals in consumer products
Exposure to chemicals in consumer products has been gaining increasing attention, with multiple studies showing that near-field exposures from products is high compared to far-field exposures. Regarding the numerous chemical-product combinations, there is a need for an overarching review of models able to quantify the multiple transfers of chemicals from products used near-field to humans. The present review therefore aims at an in-depth overview of modeling approaches for near-field chemical release and human exposure pathways associated with consumer products. It focuses on lower-
tier, mechanistic models suitable for life cycle assessments (LCA), chemical alternative assessment (CAA) and high-throughput screening risk assessment (HTS). Chemicals in a product enter the near-field via a defined "compartment of entry", are transformed or transferred to adjacent compartments, and eventually end in a "human receptor compartment". We first focus on models of physical mass transfers from the product to 'near-field' compartments. For transfers of chemicals from article interior, adequate modeling of in-article diffusion and of partitioning between article surface and air/skin/food is key. Modeling volatilization and subsequent transfer to the outdoor is crucial for transfers of chemicals used in the inner space of appliances, on object surfaces or directly emitted to indoor air. For transfers from skin surface, models need to reflect the competition between dermal permeation, volatilization and fraction washed-off. We then focus on transfers from the 'near-field' to 'human' compartments, defined as respiratory tract, gastrointestinal tract and epidermis, for which good estimates of air concentrations, non-dietary ingestion parameters and skin permeation are essential, respectively. We critically characterize for each exposure pathway the ability of models to estimate near-field transfers and to best inform LCA, CAA and HTS, summarizing the main characteristics of the potentially best-suited models. This review identifies large knowledge gaps for several near-field pathways and suggests research needs and future directions.

**General information**
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Michigan, National Risk Management Research Laboratory
Authors: Huang, L. (Ekstern), Ernstoff, A. (Intern), Fantke, P. (Intern), Csiszar, S. A. (Ekstern), Jolliet, O. (Ekstern)
Pages: 1182-1208
Publication date: 2017
Main Research Area: Technical/natural sciences

**Publication information**
Journal: Science of the Total Environment
Volume: 574
ISSN (Print): 0048-9697
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.09 SJR 1.621 SNIP 1.849
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.674 SNIP 1.642 CiteScore 4.33
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.635 SNIP 1.847 CiteScore 4.2
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.527 SNIP 1.759 CiteScore 3.73
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.773 SNIP 1.811 CiteScore 3.7
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.798 SNIP 1.681 CiteScore 3.61
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.644 SNIP 1.513
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.571 SNIP 1.602
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.463 SNIP 1.501
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.407 SNIP 1.491
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.515 SNIP 1.605
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.442 SNIP 1.508
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.123 SNIP 1.305
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.164 SNIP 1.369
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.168 SNIP 1.352
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.063 SNIP 1.081
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.98 SNIP 1.071
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.925 SNIP 0.937
Original language: English
Human exposure models, High-throughput risk screening, Life cycle impact assessment, Mass transfer fractions, Consumer products, Indoor environment
DOIs:
10.1016/j.scitotenv.2016.06.118
Source: FindIt
Source-ID: 2345083074
Publication: Research - peer-review › Journal article – Annual report year: 2016

**Art in the smart sustainable city: values, visions and engagement**

**General information**
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Gregg, J. S. (Intern)
Publication date: 2017
Event: Poster session presented at Smart Sustainable Cities, Kgs. Lyngby, Denmark.
Main Research Area: Technical/natural sciences
Electronic versions:
Smart_art_cities.pdf

**Bibliographical note**
Smart Sustainable Cities Workshop DTU, 6 Feb 2017
Source: PublicationPreSubmission
Source-ID: 130397496
Publication: Research › Poster – Annual report year: 2017

**A Scalable Smart Meter Data Generator Using Spark**
Today, smart meters are being used worldwide. As a matter of fact smart meters produce large volumes of data. Thus, it is important for smart meter data management and analytics systems to process petabytes of data. Benchmarking and testing of these systems require scalable data, however, it can be challenging to get large data sets due to privacy and/or data protection regulations. This paper presents a scalable smart meter data generator using Spark that can generate realistic data sets. The proposed data generator is based on a supervised machine learning method that can generate data of any size by using small data sets as seed. Moreover, the generator can preserve the characteristics of data with respect to consumption patterns and user groups. This paper evaluates the proposed data generator in a cluster based environment in order to validate its effectiveness and scalability.

**General information**
State: Published
A Science Cloud for Smart Cities Research

Cities are densely populated and heavily equipped areas with a high level of service provision. Smart cities can use these conditions to achieve the goals of a smart society for their citizens. To facilitate such developments, the necessary IT-infrastructure has to be in place for supporting, amongst many other things, the whole lifecycle of big data management and analytics for research activities. At the Centre for IT-Intelligent Smart Energy for Cities, we have therefore been developing a flexible infrastructure, based on open source technologies. This paper presents this solution and its application in a city and building research.

General information

State: Published
Organisations: Department of Civil Engineering, Section for Building Energy, Department of Management Engineering, Systems Analysis, Section for Indoor Climate and Building Physics, Centre for IT-Intelligent Energy Systems in Cities
Authors: Heller, A. (Intern), Liu, X. (Intern), Gianniou, P. (Intern)
Pages: 679-684
Publication date: 2017
Conference: CISBAT 2017, Lausanne, Switzerland, 06/09/2017 - 06/09/2017
Main Research Area: Technical/natural sciences

Publication information

Journal: Energy Procedia
Volume: 122
ISSN (Print): 1876-6102
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.16 SJR 0.467 SNIP 0.586
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.365 SNIP 0.561 CiteScore 0.92
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.433 SNIP 0.81 CiteScore 1.09
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.425 SNIP 0.785 CiteScore 1.02
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): SJR 0.425 SNIP 0.563 CiteScore 1.08
ISI indexed (2012): ISI indexed no
Web of Science (2012): Indexed yes
Scopus rating (2011): SJR 0.918 SNIP 1.505 CiteScore 2.42
ISI indexed (2011): ISI indexed no
A Simulation-based Markov Decision Process for the Scheduling of Operating Theatres

Assessing the Added Value of information systems supporting facilities management business processes

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Department of Applied Mathematics and Computer Science, Statistics and Data Analysis, Aalborg University
Authors: Andersen, A. R. (Intern), Nielsen, B. F. (Intern), Stidsen, T. J. R. (Intern), Reinhardt, L. B. (Ekstern)
Number of pages: 1
Publication date: 2017
Event: Abstract from European Conference on Stochastic Optimization 2017, Rom, Italy.
Main Research Area: Technical/natural sciences
Electronic versions:
Abstract.pdf

Relations
Activities:
Assessing the Added Value of information systems supporting facilities management business processes
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017

Purpose: To present a method for assessing the added value of Information Systems (IS), which are implemented to support the business processes in Facilities Management (FM). Theory: The method is based on a supply chain management model of FM, general value dimensions such as efficiency and effectiveness and the concepts of Value Adding Management (VAM) and Functional Affordances of IS. Design/methodology/approach: From case studies of IS implementation processes in FM in different countries, a general picture of the expressed added value of IS in FM was established. Based on this insight a method for assessing the added value of IS in FM was developed. The proposed method is applied to one of the cases. Findings: The paper analyses how a specific IS supports the management of a specific operational process – cleaning in an airport. The assessment shows that the IS definitely adds value to the cleaning process and because the resulting increase in user experience of the cleaning level is aligned with the strategy of the corporation, the IS also adds value to the primary process of the organisation. The analysis reveals that a well organised management setup is required to gain value from IS. It also illustrates that implementing IS includes both organisational and technological changes and demonstrates that the proposed assessment method is applicable to practice. Originality/value: This is the first paper using a supply chain management model of FM, general value dimensions, VAM and Functional Affordances to access the added value of IS in FM.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Rambøll Management Consulting
Authors: Ebbesen, P. (Ekstern), Jensen, P. A. (Intern)
Number of pages: 11
Publication date: 2017
Host publication information
Title of host publication: Research Papers for EuroFM’s 16th Research Symposium at EFMC2017
Main Research Area: Technical/natural sciences
Conference: EUROFM’s 16th Research Symposium, EFMC 2017, Madrid, Spain, 25/04/2017 - 25/04/2017
Electronic versions:

Bibliographical note
Assessing the edible city: Environmental implications of urban agriculture in the Northeast United States

One of the pivotal environmental challenges in the coming decades will be feeding an increasingly wealthy and populated planet in a sustainable manner. As industrialization and concomitant urbanization affect hitherto peripheral economies, much of this challenge will depend on the ability to support the nutritional demands of a global urban population in a fashion aligned with the biophysical capacity of the planet. Amongst the myriad of solutions proposed to guide humanity towards more environmentally sustainable food system, co-locating food production and consumption in cities is an area that has seen significant action in research, design and practice. In the Northeast United States, where per capita diets are amongst the most environmentally intensive globally, there is a growing interest in local food production as a way to reduce the ecological burdens of food demand. Urban farms and pro-urban agriculture planning agendas are proliferating throughout many of the region's cities, typically with urban agriculture's environmental sustainability evoked to varying degrees in support of these initiatives. However, environmental appraisals comparing urban and rural food production are scarce in existing literature, leaving a number of lingering questions surrounding urban agriculture's environmental performance. In a Northern context, it remains to be seen whether the benefits of reducing distance from farm to fork are outweighed by the energy demanded by yearround growing systems. Even if urban agriculture does provide leaner resource intensities at the farm scale, do these add up to meaningful shifts in a city's environmental footprint at the urban scale? The aim of this project was to begin removing these uncertainties using the Northeast United States as a case study, since cities within that region have some of the most vibrant and well-supported urban farming communities in the Global North. This report is comprised of six chapters that probe and add to our current understanding of urban food systems.

Assessing transformational change from institutionalising digital capabilities on implementation and development of Product-Service Systems: Learnings from the maritime industry

Digitization is rapidly reshaping industries and economic sectors. It enables novel Product-Service Systems (PSS) that transform customer/supplier relationships and introduces new value propositions. However, while opportunities for novel types of PSS arise, it is not clear how digitization and the institutionalisation of digital capabilities, particularly within the customer organisations, may affect implementation of PSS, potentially leading to transformational changes in the customer organisation. This paper examines one such potential transformational change from three complementary viewpoints – the resource based, the dynamic, and the relational viewpoint. It does so through action research study in the context of the maritime industry, which is particularly attractive for PSS offerings. The research methodology comprised a two-step action research process, focusing on both digitization and PSS development and implementation. The main findings are that rather than facilitating procurement to co-development of PSS, institutionalisation of digital capabilities facilitated development of PSS by stakeholders internal to the company, and strategic co-development with external stakeholders. The new digital capabilities circumvented cost barriers associated with the procurement of services from external stakeholders, supported process standardization - to the expense of process innovation-, and transformed the network that delivered PSS by closing opportunity gaps for externally procured services. Furthermore, the uptake of digital capabilities highlighted the importance of cost estimation in making the customer more responsive to threats and opportunities.
Assessing Transformational Change Potential in case of the Tunisian Cement NAMA

General information
State: Submitted
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Boodoo, Z. (Intern), Olsen, K. H. (Intern)
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Climate Policy
ISSN (Print): 1469-3062
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.23 SJR 1.165 SNIP 1.414
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.596 SNIP 1.268 CiteScore 2.42
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.215 SNIP 0.955 CiteScore 1.82
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.777 SNIP 0.827 CiteScore 1.36
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.95 SNIP 0.945 CiteScore 1.57
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.019 SNIP 0.873 CiteScore 1.35
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.808 SNIP 1.15
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.683 SNIP 1.241
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.885 SNIP 0.962
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.398 SNIP 0.719
Scopus rating (2006): SJR 0.701 SNIP 1.388
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.92 SNIP 1.256
Scopus rating (2004): SJR 0.983 SNIP 1.511
Scopus rating (2003): SJR 0.684 SNIP 1.051
Assessment of physical and ecological space consumed by transport modes: A case of Rajkot city India

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, UNEP DTU Partnership, Technical University of Denmark
Authors: Will, M. (Ekstern), Cornet, Y. (Intern), Munshi, T. (Intern)
Number of pages: 1
Publication date: 2017

Host publication information
Title of host publication: Book of Abstracts, Sustain 2017
Publisher: Technical University of Denmark (DTU)
Article number: L-12
Main Research Area: Technical/natural sciences
Conference: Sustain 2017, Kgs. Lyngby, Denmark, 06/12/2017 - 06/12/2017
Electronic versions:
SustainAbstracts2017c.compressed_108.pdf
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

Assessment of stormwater management options in urban contexts using Multiple Attribute Decision-Making
This paper addresses the problem of selecting the most sustainable stormwater management alternative in developing countries in a dense urban context. Firstly, suitable Low Impact Development (LID) stormwater management measures for dense urban areas in developing countries were identified based on critical review of literature. Alternatives have been formulated as varying percentages (degree of adoption) of these suitable measures to manage the stormwater sustainably. Further, a novel decision-making framework is developed which generates the hierarchy for selection of the most sustainable stormwater management alternative. Four main criteria (technical, economic, environmental and social) comprising three quantitative and eight qualitative indicators have been used for evaluating seven alternatives. The regional and local societal priorities are captured through criteria- weightings and are translated into a decision-making methodology. Experts' opinions have been included using Analytical Hierarchy Process (AHP). One of the most widely used Multiple Attribute Decision-Making (MADM) method, TOPSIS, is used to rank the alternatives and to identify the most sustainable alternatives. Various scenarios to represent different stakeholders' perspectives have been articulated. Alternative with medium level of cost implication and satisfactory level of performance is chosen by the decision making method in most of the scenarios. The proposed decision making approach can be used for selecting sustainable stormwater management options in densely populated areas of developing countries.

General information
State: Published
Organisations: Department of Management Engineering, Maharashtra Institute of Technology , Government College of Engineering Pune
Authors: Gogate, N. G. (Ekstern), Kalbar, P. (Intern), Raval, P. M. (Ekstern)
Pages: 2046-2059
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Cleaner Production
Volume: 142
ISSN (Print): 0959-6526
Ratings:
BFI (2018): BFI-level 2
Sustainable stormwater management, Decision-making, Multi-criteria evaluation, TOPSIS, Analytical hierarchy process, Multiple Attribute Decision-Making

DOIs:
10.1016/j.jclepro.2016.11.079

Source: FindIt
Source-ID: 2349019477
Publication: Research - peer-review › Journal article – Annual report year: 2017
A Survey of Scholarly Data: From Big Data Perspective

Recently, there has been a shifting focus of organizations and governments towards digitization of academic and technical documents, adding a new facet to the concept of digital libraries. The volume, variety and velocity of this generated data, satisfies the big data definition, as a result of which, this scholarly reserve is popularly referred to as big scholarly data. In order to facilitate data analytics for big scholarly data, architectures and services for the same need to be developed. The evolving nature of research problems has made them essentially interdisciplinary. As a result, there is a growing demand for scholarly applications like collaborator discovery, expert finding and research recommendation systems, in addition to several others. This research paper investigates the current trends and identifies the existing challenges in development of a big scholarly data platform, with specific focus on directions for future research and maps them to the different phases of the big data lifecycle.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Jamia Millia Islamia
Authors: Khan, S. (Ekstern), Liu, X. (Intern), Shakil, K. A. (Ekstern), Alam, M. (Ekstern)
Pages: 923-944
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Information Processing & Management
Volume: 53
Issue number: 4
ISSN (Print): 0306-4573
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.83 SJR 0.717 SNIP 2.068
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.732 SNIP 2.077 CiteScore 2.37
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.783 SNIP 2.102 CiteScore 2.07
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.707 SNIP 1.706 CiteScore 2.05
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.608 SNIP 1.789 CiteScore 1.99
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.865 SNIP 2.627 CiteScore 2.58
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.948 SNIP 2.309
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.992 SNIP 2.512
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.13 SNIP 2.427
Scopus rating (2007): SJR 1.464 SNIP 2.691
Scopus rating (2006): SJR 1.078 SNIP 2.592
Scopus rating (2005): SJR 0.846 SNIP 2.076
Scopus rating (2004): SJR 1.062 SNIP 2.203
Scopus rating (2003): SJR 1.638 SNIP 2.566
Scopus rating (2002): SJR 1.638 SNIP 2.446
Scopus rating (2001): SJR 1.713 SNIP 2.149
Scopus rating (2000): SJR 0.792 SNIP 1.629
A system dynamics case study of resilient response to IP theft from a cyber-attack

Undesirable changes in supply chain physical operations derived from disruptions in the transmission or storage of digital information are reported daily despite the Information Technology (IT) protection available. Once a disruption materializes, the company losses will depend on the coherence and swiftness of the supply chain response (resilience). However, current resilience frameworks are qualitative, do not address evolution over time as a relevant aspect, and thus do not provide indications on how to design a resilient response. This paper contributes to closing this gap by developing a system dynamics model from an actual case of resilient response after a cyber-attack. Both case-specific and generic structures are extracted from the case data analysis, and a reaction mechanism is proposed that results in the observed behavior. The identification of these structures should eventually aid decision makers in the process of designing a resilient supply chain response.

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Auctions for renewable energy support - Taming the beast of competitive bidding

Auctions for Renewable Energy Support - AURES - is a coordination and support action financed by the European Commission under the Horizon 2020 program to improve the implementation of renewable energy policies in EU Member States. AURES was conceived by the need of implementing market-based instruments including competitive bidding processes (i.e. auctions or tenders) to allocate support for renewable energy sources (RES) in the European electricity sector from 2015 onwards as stipulated in the EC State Aid Guidelines. Many European countries have by now undertaken competitive auctions for different technologies with mixed experiences while others have recently started or are at the verge of starting the implementation process. Energy community countries may also soon introduce competition for support payments. Therefore, there exists the need for capacity building of policy makers and market participants to successfully design, implement and use auctions for RES support. AURES ran from January 2015 to December 2017 and has generated new insights on the applicability of auctions for renewable support and on specific auction designs under different market conditions and policy goals in European countries. These insights are based on theoretical and empirical analysis (energy auctions in 12 European countries and 8 non-European countries), the use of state of the art simulation models and experiments, and through cooperation cases with some Member States providing tailor-made policy support in the implementation of auctions. AURES contributed to a strong knowledge-sharing with workshops, webinars, bi- and multilateral meetings, an interactive website and dedicated auction tools (AURES cash flow model and AURES auction designer). This final report covers a discussion of major findings and insights in regards to auction designs that AURES has identified to be relevant in the context of renewable energy.

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Automated HAZOP revisited

Hazard and operability analysis (HAZOP) has developed from a tentative approach to hazard identification for process plants in the early 1970s to an almost universally accepted approach today, and a central technique of safety engineering. Techniques for automated HAZOP analysis were developed in the 1970s, but still have not displaced expensive manual approaches. Reasons for this were investigated and conclusions are drawn. The author’s actual experience in applying automated HAZOP techniques over a period of more than 30 years is revisited, including results from several full-scale validation studies and many industrial applications. Automated techniques, when combined with manual approaches, were found to provide significant improvements in HAZOP quality and a limited but valuable improvement in efficiency.
Automatic Identification of Similarities Across Products to Improve the Configuration Process in ETO Companies

Engineer-To-Order (ETO) companies making complex products face the challenge of delivering highly customised products with high quality, affordable price and a short delivery time. To respond to these challenges, ETO companies strive to increase the commonality between different projects and to reuse product-related information. Therefore, ETO companies need to retrieve data about previously designed products and identify parts of the design that can be reused to improve the configuration process. This allows companies to reduce complexity in the product portfolio, decrease engineering hours and improve the accuracy of the product specifications. This article proposes a framework to identify and compare products’ similarities. The framework (1) identifies the most important product variables available in the Product Configuration System (PCS), (2) retrieves data of previously designed products in an Enterprise Resource Planning (ERP) system, (3) identifies a method to compare products based on the main products variables and (4) sets up an IT system (database) with data of the previously designed products to integrate with the PCS. The proposed approach (the framework and the IT system) is tested in an ETO company to evaluate the application of the framework and the IT system. We retrieved the needed data from the ERP system at the case company and developed the IT system in Microsoft Excel, which is integrated with the PCS.
Balancing Constraints and the Sweet Spot as Coming Topics for Creativity Research

The aim of this chapter is the introduction of two new concepts, ‘balancing constraints’ and ‘the sweet spot of creativity’, as promising new paths for creativity research. This is motivated by the fact that creativity research shows a growing interest in the fundamental entwinement of constraints and creativity, with skillful and innovative handling of constraints seen as a prerequisite for apt creative performance. Based on a brief review of current disparate conceptualizations of constraints as both enablers and restrainers of creative activities, we begin by proposing the unifying concept ‘creativity constraints’ to help establish common terminological ground. Since the presence of constraints change over time, we suggest the term ‘constrainedness’ to articulate this total constraint intensity at a given time. This allows us to introduce our main contribution, the concept ‘the sweet spot’, to address the salient situations where the creative practitioner can be said to experience the ‘right’ level of constrainedness conducive to optimum creative performance. We then proceed to consider how the sweet spot can be attained by balancing constraints, i.e., by manipulating the intensity of constrainedness. More concretely, this means by hardening or softening the constraints at hand, resulting in a higher or lower level of constrainedness. Finally, we discuss how future studies can employ and inform these new concepts, which we see as potentially rich for cross-disciplinary creativity research focusing on the essential entwinement of constraints and creativity.

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Barriers for district heating as a source of flexibility for the electricity system

The Scandinavian countries Denmark, Norway and Sweden currently deploy large amounts of variable renewable energy (VRE) sources, especially wind power. This calls for additional flexibility in the power market. The right coupling to the underlying national and local district heating (DH) markets can generate large amounts of flexibility. However, regulatory barriers and different energy market designs may hinder the potential benefits from system integration, and lower the potential that can be realized. The Scandinavian countries have a large extension of DH with a good potential for providing flexibility services to the electricity market. We survey and discuss regulatory barriers and drivers for exploiting this potential for flexibility. Combined heat and power (CHP) is widely integrated in the power market, but it is threatened by low electricity prices due to the increasing amounts of wind power. Power-to-heat technologies, electric boilers and heat pumps are blocked by high tariffs and taxes. A calculation of the heat costs of different DH technologies demonstrates that, under the present price and tax conditions in Denmark and Sweden, CHP and power-to-heat are unable to compete with heat-only boilers that use tax-free biomass.

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Bedre trafikuheldsdata: Danske erfaringer med brug af forskellige typer trafikuheldsdata

Viden om trafikuheld er en vigtig forudsætning for effektivt at kunne forbedre trafiksikkerheden, dels for at forstå de mekanismer, der ligger til grund for uheldes opståen, dels for at kunne tilrettelægge målrettede uheldsforebyggende tiltag og dels for at kunne foretage en kvalificeret prioritering mellem forskellige tiltag, når det er påkrævet. Det er velkendt, at en stor andel af de trafikuheld, der finder sted, af forskellige grunde ikke registreres i den officielle, nationale trafikuheldsstatistik. Dette gælder i særlig grad eneuheld og cyklistuheld. Blandt fagpersoner med behov for faktuel viden om trafikuheld i Danmark har der derfor gennem snart mange år været et ønske om at forbedre datagrundlaget fx gennem inddragelse af andre datakilder som supplement til de politiregistrerede trafikuheldsdata. Trods en række forskellige lokale og regionale initiativer gennem årene er det imidlertid endnu ikke lykkedes at finde en national model for inddragelse af sådanne supplerende datakilder. Som led i processen mod et bedre datagrundlag for trafikuheld har Transport DTU/DTU Management Engineering, med støtte fra TrygFonden, gennemført nærværende projekt. Formålet har været at tilvejebringe et nationalt overblik over eksisterende datakilder vedr. trafikuheld, nuværende erfaringer med supplerende datakilder samt behov og forventninger blandt udvalgte interessenter vedrørende nuværende og fremtidig anvendelse af supplerende datakilder.

Behavioural design: A process for integrating behaviour change and design

Nudge, persuasion, and the influencing of human behaviour through design are increasingly important topics in design research and in the wider public consciousness. However, current theoretical approaches to behaviour change have yet to be operationalized this in design process support. Specifically, there are few empirically grounded processes supporting designers in realising behaviour change projects. In response to this, 20 design projects from a case company are analysed in order to distil a core process for behavioural design. Results show a number of process stages and activities associated with project success, pointing to a new perspective on the traditional design process, and allowing designers to integrate key insights from behaviour change theory. Using this foundation we propose the Behavioural Design process.
Being, doing and leading in the project society

The last decades have seen a proliferation of projects across different contexts, from the building of an iconic venue to the planning of a family vacation. Building on Jensen (2009) work on the project society and Jensen et al (2016) articulation of projects as human conditions, this article explores strategies for living in the project society. Guided by the philosophical concepts of activity, time, space and relations, we explore the project society as an ideal type, in opposition to the disciplinary society. We discuss implications of being, doing and leading in a project society. Taken together this analysis describes some of the key challenges emerging from the project society and suggests some ideas and advices to fellow project man and woman, navigating in project society.

The work extends our understanding of projects beyond organizational settings – to a societal and individual level. We argue that, first, our growing and insightful body of literature on project organizing can become useful for each one of us as individuals navigating in project society. Second, it opens up to a more extensive empirical context – studying behaviour of people in projects, outside classic organizational settings. In this respect, the article serves as a basis for future research on living in the project society where nothing lasts forever but our projects define who we are and what we can become.
Benchmarking healthcare logistics processes: a comparative case study of Danish and US hospitals

Logistics processes in hospitals are vital in the provision of patient care. Improving healthcare logistics processes provides an opportunity for reduced healthcare costs and better support of clinical processes. Hospitals are faced with increasing healthcare costs around the world and improvement initiatives prevalent in manufacturing industries such as lean, business process reengineering and benchmarking have seen an increase in use in healthcare. This study investigates how logistics processes in a hospital can be benchmarked to improve process performance. A comparative case study of the bed logistics process and the pharmaceutical distribution process was conducted at a Danish and a US hospital. The case study results identified decision criteria for designing efficient and effective healthcare logistics processes. The most important decision criteria were related to quality, security of supply and employee engagement. Based on these decision criteria, performance indicators were developed to enable benchmarking of logistics processes in healthcare. The study contributes to the limited literature on healthcare logistics benchmarking. Furthermore, managers in healthcare logistics are provided with a list of decision parameters relevant for designing and benchmarking processes.

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Between Indoor and Outdoor. Norwegian Perceptions of Well-Being in Energy Efficient Housing
An increased societal focus on energy efficiency has led to the development of new building concepts and standards in many countries, such as the passive house standard in Norway which implies a dense building envelope with restrictions on the use of glass and natural ventilation. Generally low-energy building concepts are based on a rational approach to comfort in housing limited to mainly measurable aspects. This, however, hardly reflects what makes residents feel comfortable at home, since it lacks a holistic understanding of residential well-being. Well-being is a complex and multi-faceted concept that includes atmosphere and feeling at home. In a qualitative study of four Norwegian low-energy housing projects, we investigate and discuss the impact of visual and sensory qualities, like view, daylight and access to fresh air, on residential well-being. The study reveals that it is possible to achieve well-being in energy-efficient housing, but some practices jeopardize the energy-design concept and influence energy use. Residents find strategies to achieve well-being by opening windows and doors, despite restrictions on airing naturally. Access to daylight and view and the ability to open windows or balcony doors to let in air, smells and sounds from the outside are crucial for residents’ well-being and thus important factors to consider when designing and building energy-efficient housing where people feel at home.

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Biased flavour or just flavour?
As the sense of taste only detects the basic tastes, it is commonly understood that the taste of food is much more accurate captured by the concept of flavour, following ISO (and most of the literature), the rather “complex combination of the olfactory, gustatory and trigeminal sensations perceived during tasting.” Within the last decades, however, several studies have found colour, sound, information, and circumstances to impact flavour, and, subsequently, it seems common to say that flavour is deceived, or flavour is biased.

Addressing flavour as biased, however, presupposes some distinction between the (very) flavour and the perceived (but biased) flavour. But such distinction also seems artificial. Only very rarely, if ever, do we eat blinded for sound, vision, and information and we never eat blinded for circumstances.

Moreover, following Gordon Shepherd, flavour is not literally a property of food, though it depends upon its molecular composition, but a subject’s sense reaction on a substance. In other words, flavour is in the brain, not the food.

So what then justifies the current and commonly used definition of flavour? In this paper I will argue that the concept of flavour ought to be redefined. Subsequently I will suggest how.

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Bioenergy production and sustainable development: science base for policy-making remains limited

The possibility of using bioenergy as a climate change mitigation measure has sparked a discussion of whether and how bioenergy production contributes to sustainable development. We undertook a systematic review of the scientific literature to illuminate this relationship and found a limited scientific basis for policy-making. Our results indicate that knowledge on the sustainable development impacts of bioenergy production is concentrated in a few well-studied countries, focuses on environmental and economic impacts, and mostly relates to dedicated agricultural biomass plantations. The scope and methodological approaches in studies differ widely and only a small share of the studies sufficiently reports on context and/or baseline conditions, which makes it difficult to get a general understanding of the attribution of impacts.

Nevertheless we identified regional patterns of positive or negative impacts for all categories – environmental, economic, institutional, social and technological. In general, economic and technological impacts were more frequently reported as positive, while social and environmental impacts were more frequently reported as negative (with the exception of impacts on direct substitution of GHG emission from fossil fuel). More focused and transparent research is needed to validate these patterns and develop a strong science underpinning for establishing policies and governance agreements that prevent/mitigate negative and promote positive impacts from bioenergy production.

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Bin-packing problems with load balancing and stability constraints

The Bin-Packing Problem (BPP) is one of the most investigated and applicable combinatorial optimization problems. The problem consists of packing objects of different sizes into a finite number of similar bins, such that the number of used bins is minimized. Applications of the bin-packing problem appear in a wide range of disciplines, including transportation and logistics, computer science, engineering, economics and manufacturing. The problem is well-known to be NP-hard and difficult to solve in practice, especially when dealing with the multi-dimensional cases. Closely connected to the BPP is the Container Loading Problem (CLP), which addresses the optimization of a spacial arrangement of cargo inside a container or transportation vehicle, with the objective to maximize the value of the cargo loaded or the volume utilization. The CLP focuses on a single container, and has been extended in the literature to handle a variety of different constraints arising from real-world problems. Consider for example the problem of arranging items into an aircraft cargo area such that the barycenter of the loaded plane is as close as possible to an ideal point given by the aircraft’s specifications. The position of the barycenter has an impact on the flight performance in terms of safety and efficiency, and even a minor displacement from the ideal barycenter can lead to a high increase of fuel consumption [1]. Similar considerations apply when loading trucks and container ships. The aim of this work is to integrate realistic constraints related to e.g. load balancing, cargo stability and weight limits, in the multi-dimensional BPP. The BPP poses additional challenges compared to the CLP due to the supplementary objective of minimizing the number of bins. In particular, in section 2 we discuss how to integrate bin-packing and load balancing of items. The problem has only been considered in the literature in simplified versions, e.g. balancing a single bin or introducing a feasible region for the barycenter. In section 3 we generalize the problem to handle cargo stability and weight constraints.

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Brazil’s Soft-Power Strategy: The Political Aspirations of South–South Development Cooperation

By trading upon the principles of South-South cooperation, Brazil is widely viewed as having gained a positive image worldwide. Brazil’s South-South development cooperation was one of the foreign policy instruments it used to raise this profile. However, studies of the generation of soft power are still lacking in the international relations literature, and where
empirical research exists it focuses more on the results of soft power strategies than on how soft power is created. Therefore, this article explores how Brazil’s soft power strategy is conceptualized in Brazil’s development cooperation discourse and how it is operationalized through South-South development activities. This research uses a triangulation method combining the analysis of official documents, academic studies and interviews to conclude that the Brazilian government under President Lula (2003-2011) influenced the organization of its cooperation agency and guided it towards sectors and targets that contribute to the creation of positive outcomes. This article contributes to the debate on the state’s behavior in soft power, that is, the ‘behavior’ of the Brazilian government in the design of its cooperation agency’s activities, thus also contributing to knowledge about the relationship between an agent’s behavior and the outcomes of a country’s policy of ‘soft empowerment’.

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Bridging the gap from research-to-high-technology ventures with experienced entrepreneurs
The paper explores an alternative approach to the traditional transfer of university research output. This approach proposes a systematic search and matching of external experienced entrepreneurs with university researchers to stimulate spinning out university-developed technology. ‘Bridging the gap’ (BtG) is a model for combining the experiences, market insight and network connections of experienced entrepreneurs and the technical knowledge and capabilities of university researchers to create a stronger basis for spin-outs. Inserting market knowledge and competences in the research domain of scientists optimises the selection of technology applications, which accelerates the spin-out process and generally strengthens the prospects for the emerging firm to achieve and sustain growth. Application of the model in two departments at the Technical University of Denmark provides empirical evidence for its usefulness.

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Can carbon footprint serve as proxy of the environmental burden from urban consumption patterns?
Carbon footprint (CFP) is widely applied as an indicator when assessing environmental sustainability of products and services. The objective of the present study is to evaluate the validity of CFP as an overall environmental indicator for representing the environmental burden of residents from urbanized areas. Applying four different Life Cycle Impact Assessment (LCIA) methods environmental impact profiles were determined for the consumption patterns of 1281 Danish urban residents. Six main consumption components were distinguished including road transport, air travel, food, accommodation (covering consumption of materials for the construction of dwellings) and use of energy in terms of thermal energy, and electricity. The results for the individual consumption components showed a strong correlation between CFP and nearly all other impact indicators for all the applied LCIA methods. However, upon aggregation of the indicator results across consumption components, the impact indicators for the total consumption showed no significant correlation between CFP and the other impact scores for any of the four impact assessment methods. These findings suggest that while CFP can be a good indicator of the environmental burden associated with specific activities, this is not the case for more complex activities (such as consumption patterns related to urban life styles). This conclusion discourages the use of CFP as sustainability measure in relation to regulation of private or public consumption.
Can you design for Fidelity? How your intervention framework describes intended actions, participation and behavior

In recent years the term fidelity has been introduced within the field of organizational level interventions. Fidelity describes the extent to which the intervention has been implemented as it was originally intended, and is regarded critical for determining the validity of the research results. The reason for introducing this term has been for researchers to be able to conclude whether an intervention has worked as intended. In this paper we discuss the term fidelity in relation to the concept of script analysis (Akrich 1994). We do this to question whether it is even relevant to discuss fidelity in organizational level interventions. The concept of fidelity stems from clinical interventions although the concept has developed over time (Bellg et al. 2004). Organizational level interventions differ from clinical interventions, as they are more complex regarding both the “dose” given and the number and levels of participants involved at the same time. Steering organizational level interventions in every detail and secure full fidelity or treatment integrity can thus seem difficult. Organizational level intervention frameworks are often built on the designer’s experiences with previous interventions as well as what have been reported as best practice. The designer thus has a large role in making the intervention work – he or she can design intended actions, participation and behavior into the framework. The notion script can help explain the designer’s role. A script is the designer’s presumptions, visions and predictions about how the framework will interact with the intervention participants. As derived concepts Akrich (1994) introduces ‘in-scription’ and ‘de-scription’. Where ‘in-scription’ is the limitations and constraint that the intervention designer in-scribe in the framework, and ‘de-scription’ is how the intervention participants interpret the framework and adjust the framework to the organization.

General information

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Can you put too much on your plate? Uncertainty exposure in servitized triads

Purpose: Servitization increases the uncertainty exposure of provider firms due to the operational differences between services and production which is further increased when operations are set in triads. This paper analyses the uncertainty exposure in servitized triads and explores suitable organisational responses.

Design/methodology/approach: A conceptual frame is defined detailing three uncertainty types (environmental, organisational and relational uncertainty) and suitable organisational responses to these. This frame guided the analysis of in-depth case evidence from a cross-national servitized triad in a European-North African set-up which was collected through 29 semi-structured interviews and secondary data.

Findings: The empirical study identified the existence of the three uncertainty types and directional knock-on effects between them. Specifically, environmental uncertainty created organisational uncertainty which in turn created relational uncertainty. The uncertainty types were reduced through targeted organisational responses where formal relational governance reduced environmental uncertainty, service capabilities reduced organisational uncertainty, and informal relational governance reduced relational uncertainty. The knock-on effects were reduced through organisational and relational responses.

Originality: This paper makes two contributions. First, a structured analysis of the uncertainty exposure in servitized triads is presented which shows the existence of three individual uncertainty types and the knock-on effects between them. Second, organisational responses to reduce the three uncertainty types individually and the knock-on effects between them are presented.

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Scopus rating (2011): SJR 1.109 SNIP 1.667 CiteScore 2.64
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.291 SNIP 1.719

A reduced attractiveness of investments in reliable fossil power plants in liberalized markets on the background of a transition towards renewable energies has brought a discussion on capacity policies to Europe. I develop a partial equilibrium model to compare effects of three polar capacity remuneration mechanisms (CRMs) based on the assumption that a CRM is indicated. A strategic reserve (SR) policy with administratively set capacity targets, a capacity market (CM) based on public procurement, and a decentralized reserve market with the obligation of generators to finance reserves in relation to their peak supply (RM). Substantial differences of policies arise across countries and regarding consumers and producers due to power plant structures. By 2023, we find the decentralized RM to induce least pronounced distributional effects and only modest welfare reductions, while SR and CM induce higher losses. In the longer term until 2033, welfare results differ less pronounced, although the RM is most friendly to consumers. A robust policy conclusion has to pay attention to further aspects concerning the environment and technological developments.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Traber, T. (Intern)
Pages: 1-14
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Utilities Policy
Volume: 46
ISSN (Print): 0957-1787
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.77 SJR 0.801 SNIP 1.152
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.531 SNIP 1.026 CiteScore 1.59
BFI (2014): BFI-level 1
Since 1974, the government of Kenya has recognised water supplies as critical for poverty reduction and development. Kenya’s economic and social development Vision 2030 emphasises the need for adequate and sustainable provision of water supply and sanitation services, with a target to achieve universal access by 2030. However, thus far most water development targets have not been achieved. Improvement has been much slower in rural and low income urban areas, and the current funding level is inadequate to achieve universal access by 2030. Over the years, official effort have been complemented through non-programmatic community and selfhelp action, but many projects quickly deteriorate after implementation and are rarely functioning 5 years after implementation. Consequently, water services available for the poor in Kenya are often inadequate, unsafe and unsustainable. Weak attention to planning, standards and operations and maintenance, including source and cost of energy in rural and peri-urban water supplies is a key challenge to functionality and sustainability.
Challenges to application of the three points approach (3PA) - ambiguity in definition of event magnitude, spatial scales and goals

General information
State: Published
Organisations: Department of Environmental Engineering, Urban Water Systems, Department of Management Engineering, Technology and Innovation Management
Authors: Madsen, H. M. (Intern), Rygaard, M. (Intern), Andersen, M. M. (Intern), Mikkelsen, P. S. (Intern)
Number of pages: 3
Pages: 1995-1997
Publication date: 2017

Challenges with managing hazardous chemicals in the international frame - opportunity for educating on sustainable chemistry and alternatives assessment

Introduction
Within international chemicals management treaties like the Stockholm Convention on Persistent Organic Pollutants (POPs) or the Vienna Convention/Montreal Protocol on Ozone Depleting Substances (ODS) the phase out and management of hazardous chemicals is addressed globally. Decades of experiences have unveiled how difficult and expensive the management of listed chemicals is in particular the end of life.

Method
Past failures and on-going challenges to manage hazardous chemicals in the international context in particular the Stockholm Convention were assessed with considerations of a way forward.

Results and Discussion
The assessment shows the challenge with managing organohalogen compounds (chlorinated, brominated and fluorinated) in their life-cycle in particular in developing countries. In the past, often certain types of hazardous or unsustainable chemicals are continued to be used or replaced by similarly unsustainable chemicals for different reasons in various cases leading to regrettable substitutions. Examples are the substitution of POPs like lower brominated PBDEs with highly brominated PBDEs and other brominated aromatic compounds or the substitution of PCBs with chlorobenzyltoluenes and chlorinated paraffins. Since some of the recently listed POPs have a range of exemptions, a process on compiling information on alternatives has been initiated in the Stockholm Convention. Therefore, international conventions provide opportunities to substitute hazardous chemicals with more sustainable alternatives. A bottleneck is, however, that chemists, engineers, industrial designers, and policy makers often lack knowledge on green/sustainable chemistry and alternatives assessment. This is particularly a challenge in developing and transition countries. Methodologies and tools are hence needed to disseminate information on and guidance on how to phase in more sustainable alternatives. In this presentation, we suggest a comprehensive yet efficient approach of alternatives assessment which could be integrated in the education of stakeholders within the process of the substitution of chemicals e.g. in international chemical conventions.
Characterization of annual disease progression of multiple sclerosis patients: A population-based study

Previous research characterizing factors influencing multiple sclerosis (MS) disease progression has typically been based on time to disease milestones (Kaplan-Meier, Cox hazard regression, etc.). A limitation of these methods is the handling of the often large groups of patients not reaching the milestone. To characterize clinical factors influencing MS disease progression as annual transitions from each Expanded Disability Status Scale (EDSS). The annual progression of 11,964 patients from the Swedish MS Registry was analysed with 10 multinomial logistic regressions, that is, one for transition from each full EDSS with explanatory variables age, sex, age at onset, time in current EDSS, highest prior EDSS, MS course and treatment. All factors (except sex) investigated had statistically significant impacts on transitions from at least one EDSS. However, significance and size of the effect are dependent on the EDSS state of the patient. Greater age, longer time in a state, highest prior EDSS, having progressive MS and treatment had significant impacts, whereas age at onset had minor impact. Our study confirms that established factors associated with MS disease worsening in time to disease milestones also have impacts on annual progression. This approach adds granularity to what EDSS these factors have an influence.
Characterization of waterborne nitrogen emissions for marine eutrophication modelling in life cycle impact assessment at the damage level and global scale

Current life cycle impact assessment (LCIA) methods lack a consistent and globally applicable characterization model relating nitrogen (N, as dissolved inorganic nitrogen, DIN) enrichment of coastal waters to the marine eutrophication impacts at the endpoint level. This paper introduces a method to calculate spatially explicit characterization factors (CFs) at endpoint and damage to ecosystems levels, for waterborne nitrogen emissions, reflecting their hypoxia-related marine eutrophication impacts, modelled for 5772 river basins of the world.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Cosme, N. M. D. (Intern), Hauschild, M. Z. (Intern)
Pages: 1558-1570
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: International Journal of Life Cycle Assessment
Volume: 22
Issue number: 10
ISSN (Print): 0948-3349
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.43 SJR 1.328 SNIP 1.423
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.504 SNIP 1.554 CiteScore 3.49
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.736 SNIP 1.738 CiteScore 3.65
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.666 SNIP 1.979 CiteScore 3.35
ISI indexed (2013): ISI indexed yes
Characterizing Aggregated Exposure to Primary Particulate Matter: Recommended Intake Fractions for Indoor and Outdoor Sources

Exposure to fine particulate matter (PM\(_{2.5}\)) from indoor and outdoor sources is a leading environmental contributor to global disease burden. In response, we established under the auspices of the UNEP/SETAC Life Cycle Initiative a coupled indoor-outdoor emission-to-exposure framework to provide a set of consistent primary PM\(_{2.5}\) aggregated exposure factors. We followed a matrix-based mass balance approach for quantifying exposure from indoor and ground-level urban and rural outdoor sources using an effective indoor-outdoor population intake fraction and a system of archetypes to represent different levels of spatial detail. Emission-to-exposure archetypes range from global indoor and outdoor averages, via archetypical urban and indoor settings, to 3646 real-world cities in 16 parameterized sub-continental regions. Population intake fractions from urban and rural outdoor sources are lowest in Northern regions and Oceania and highest in Southeast Asia with population-weighted means across 3646 cities and 16 sub-continental regions of, respectively, 39 ppm (95% confidence interval: 4.3–160 ppm) and 2 ppm (95% confidence interval: 0.2–6.3 ppm). Intake fractions from residential and occupational indoor sources range from 470 ppm to 62,000 ppm, mainly as function of air exchange rate and occupancy. Indoor exposure typically contributes 80–90% to overall exposure from outdoor sources. Our framework facilitates improvements in air pollution reduction strategies and life cycle impact assessments.
Circular economy, permanent materials and limitations to recycling: Where do we stand and what is the way forward?

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Politecnico di Milano
Authors: Grosso, M. (Ekstern), Rigamonti, L. (Ekstern), Niero, M. (Intern)
Number of pages: 2
Pages: 793-794
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Waste Management and Research
Volume: 35
Issue number: 8
ISSN (Print): 0734-242X
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.76 SJR 0.655 SNIP 1.036
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.617 SNIP 0.899 CiteScore 1.53
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.741 SNIP 1.085 CiteScore 1.28
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.588 SNIP 0.951 CiteScore 1.17
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.886 SNIP 1.046 CiteScore 1.4
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.027 SNIP 0.865 CiteScore 1.33
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.666 SNIP 0.975
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.877 SNIP 1.257
CITIES Data: a smart city data management framework

Smart city data come from heterogeneous sources including various types of the Internet of Things such as traffic, weather, pollution, noise, and portable devices. They are characterized with diverse quality issues and with different types of sensitive information. This makes data processing and publishing challenging. In this paper, we propose a framework to streamline smart city data management, including data collection, cleansing, anonymization, and publishing. The paper classifies smart city data in sensitive, quasi-sensitive, and open/public levels and then suggests different strategies to process and publish the data within these categories. The paper evaluates the framework using a real-world smart city data set, and the results verify its effectiveness and efficiency. The framework can be a generic solution to manage smart city data.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Department of Civil Engineering, Section for Building Energy, Centre for IT-Intelligent Energy Systems in Cities
Authors: Liu, X. (Intern), Heller, A. (Intern), Nielsen, P. S. (Intern)
Pages: 699-722
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Knowledge and Information Systems
Volume: 53
Issue number: 3
ISSN (Print): 0219-1377
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Closing the Loop for Packaging: Finding a Framework to Operationalize Circular Economy Strategies

This paper examines some of the most common frameworks available to companies in implementing circular economy strategies, i.e. the Cradle-to-Cradle design protocol, the Material Circularity Indicator and the Life Cycle Sustainability Assessment framework intended as a combination of Life Cycle Assessment, Environmental Life Cycle Costing and Social Life Cycle Assessment. We focus on the packaging sector and use the case of closed-loop aluminium can supply to illustrate the benefits and limitations of combining some of these frameworks. Our recommendation is to use the Life Cycle Sustainability Assessment framework to evaluate circularity strategies, since it is the most comprehensive and still operational framework and best at preventing burden shifting between stakeholders in the value chain.

General information
State: Published
Organisations: Department of Chemical and Biochemical Engineering, Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Niero, M. (Intern), Hauschild, M. Z. (Intern)
Number of pages: 6
Pages: 685-690
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Procedia C I R P
Volume: 61
ISSN (Print): 2212-8271
Ratings:
Scopus rating (2016): CiteScore 1.6 SNIP 1.297
Scopus rating (2015): SJR 0.572 SNIP 1.012
Scopus rating (2014): SJR 0.736 SNIP 1.419
Scopus rating (2013): SJR 0.515 SNIP 1.163
ISI indexed (2013): ISI indexed no
Original language: English
Control and Systems Engineering, Industrial and Manufacturing Engineering, aluminum, circularity, cradle to cradle, environmental Life Cycle Costing, Life Cycle Assessment, Life Cycle Sustainability Assessment, life cycle thinking, material circularity indicator, Social LCA, Aluminum, Network function virtualization, Sustainable development, Cradle to cradles, Environmental life cycle, Life Cycle Assessment (LCA), Life cycle sustainability assessments, Life cycle thinking, Life cycle
Clustering of maintenance tasks for the danish railway system

Standardisation of the European rail traffic signalling system is an ongoing project for faster travel within the EU, which entails very strict time limits and constraints on recovery operations. Denmark will be the first country to upgrade its entire signalling system to implement the new standards. In this paper, we present a mathematical model for allocation of maintenance tasks to maintenance team members, which is a variant of the Generalized Assignment Problem. The aim is to optimize the following three criteria: (i) the total distance travelled from depots to tasks, (ii) the maximal distance between any maintenance task and its allocated crew member, and (iii) the imbalance in workload among crew members. As test cases, we use a set of instances that simulate the distribution of tasks in the Jutland peninsula, the largest region of Denmark.

Coastal Climate Risk Coping and Sustainable Development Goals for Cities

Collaborative Filtering Fusing Label Features Based on SDAE

Collaborative filtering (CF) is successfully applied to recommendation system by digging the latent features of users and items. However, conventional CF-based models usually suffer from the sparsity of rating matrices which would degrade model's recommendation performance. To address this sparsity problem, auxiliary information such as labels are utilized. Another approach of recommendation system is content-based model which can't be directly integrated with CF-based model due to its inherent characteristics. Considering that deep learning algorithms are capable of extracting deep latent features, this paper applies Stack Denoising Auto Encoder (SDAE) to content-based model and proposes LCF(Deep
Learning for Collaborative Filtering) algorithm by combing CF-based model which fuses label features. Experiments on real-world data sets show that DLCF can largely overcome the sparsity problem and significantly improves the state of art approaches.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, University of Shanghai for Science and Technology
Authors: Huo, H. (Ekstern), Liu, X. (Intern), Zheng, D. (Ekstern), Wu, Z. (Ekstern), Yu, S. (Ekstern), Liu, L. (Ekstern)
Pages: 223-236
Publication date: 2017

Host publication information
Series: Lecture Notes in Computer Science
Volume: 10357
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Main Research Area: Technical/natural sciences
DOIs: 10.1007/978-3-319-62701-4_17
Source: PublicationPreSubmission
Source-ID: 133670115
Publication: Research - peer-review › Book chapter – Annual report year: 2017

Combined Life Cycle Assessment and Life Cycle Costing in the Eco-Care-Matrix: A case study on the performance of a modernized manufacturing system for glass containers
The objects of Life Cycle Assessment (LCA) case studies are often individual components or individual products. Studies focusing on larger industrial manufacturing systems are relatively rare. The purpose of this case study was to assess environmental and cost-related performance of an updated complex manufacturing system for glass containers (i.e. jars, glass bottles, etc.) compared to the predecessor manufacturing system. The objective was also to identify the most relevant drivers for the environmental and the cost profile of the system solution in application context by the means of Life Cycle Assessment, as well as Life Cycle Costing (LCC). The results were then to be displayed in an Eco-Care-Matrix (ECM) in order to quantitatively visualize the improvements when comparing the updated manufacturing system to the previous one and they were to be discussed in terms of (i) ecodesign levers, (ii) efficiency of the LCA process and (iii) their relevance for the speed and cost of the decision-making process. The LCA results of the production stage of the optimized components showed that the largest contributors to the potential environmental impact of the manufacturing system are the motors due to their material composition, number and mass. The use stage was subsequently recognized as the dominant life cycle stage with Global Warming Potential (GWP) as the leading indicator, due to the long service life (20 years) and the corresponding energy consumption. The analysis of a produced glass bottle’s GWP showed that it was reduced by about 40% through optimizing the production system. The LCC showed that the modernization pays off after about five years of service life and that the decision for making an Investment should not only be based on the required capital expenditure (CAPEX). Rather, operation expenditure (OPEX) should also be considered in order to reflect the savings gained from lower operating costs, which compensate relatively quickly any higher initial expenditure or initial investment. In order to apply Life Cycle Assessment on larger-scale industrial systems, smart and pragmatic LCA modeling approaches have to be developed and adopted, balancing accuracy of results against efficiency in achieving them. An adequate ecological-and-economic assessment tool would reduce the time and effort when making decisions in this context.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Dresden University of Technology
Authors: Auer, J. (Intern), Bey, N. (Intern), Schäfer, J. (Ekstern)
Pages: 99-109
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Journal: Journal of Cleaner Production
Volume: 141
ISSN (Print): 0959-6526
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.83 SJR 1.615 SNIP 2.382
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.609 SNIP 2.383 CiteScore 5.57
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.706 SNIP 2.328 CiteScore 4.07
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.461 SNIP 1.825 CiteScore 3.19
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.419 SNIP 1.742
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.942 SNIP 1.544
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.813 SNIP 1.354
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.942 SNIP 1.489
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.842 SNIP 1.543
Scopus rating (2005): SJR 0.544 SNIP 1.357
Scopus rating (2004): SJR 0.753 SNIP 1.818
Scopus rating (2003): SJR 0.501 SNIP 1.152
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.481 SNIP 1.103
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.419 SNIP 0.85
Scopus rating (2000): SJR 0.694 SNIP 0.888
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.276 SNIP 0.775
Original language: English
Life Cycle Assessment (LCA), Life Cycle Costing (LCC), Manufacturing system, Individual section machine (IS machine), Eco-Care-Matrix (ECM)
DOIs:
10.1016/j.jclepro.2016.08.096
Source: FindIt
Source-ID: 2343110669
Publication: Research - peer-review › Journal article – Annual report year: 2016
Combining eco-efficiency and eco-effectiveness for continuous loop beverage packaging systems: learnings from the Carlsberg Circular Community

Eco-efficiency (i.e., increasing value while reducing resource use and pollution) can with advantage be combined with eco-effectiveness (i.e., maximizing the benefits to ecological and economical systems) to address the challenges posed by the circular economy in the design of circular industrial systems. We present a framework combining life cycle assessment (LCA) and the Cradle to Cradle® (C2C) certification program for the development of continuous loop packaging systems, which was conceived for aluminum cans in the context of the Carlsberg Circular Community. As a first step, the environmentally optimal beverage packaging life cycle scenario is identified, both in terms of defined use and reuse. Second, the limiting factors are identified for the continuous use of materials in multiple loops, meeting the two requirements in the C2C certification process that address the material level (i.e., “material health” and “material reutilization” criteria) and the “renewable energy” criterion. Then, alternative scenarios are built to meet C2C certification criteria, and LCA is used to quantify the environmental impacts of the resulting improvement strategies, for example, change in material composition, in order to guide the identification of the optimal scenario from an eco-efficiency point of view. Finally, the business perspective is addressed by assessing the potential for a green value network business model for a closed-loop supply. The outcome is a list of prioritized actions needed to implement the most efficient and effective “upcycling” strategy for the beverage packaging, both from an environmental and an economic point of view. In the case of the aluminum cans, the main recommendation from both the LCA and C2C perspective is to ensure a system that enables can-to-can recycling.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Carlsberg Breweries A/S
Authors: Niero, M. (Intern), Hauschild, M. Z. (Intern), Hoffmeyer, S. B. (Ekstern), Olsen, S. I. (Intern)
Pages: 742-753
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Industrial Ecology
Volume: 21
Issue number: 3
ISSN (Print): 1088-1980
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.14 SJR 1.244 SNIP 1.32
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.44 SNIP 1.689 CiteScore 3.82
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.628 SNIP 1.706 CiteScore 3.07
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.171 SNIP 1.405 CiteScore 2.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.03 SNIP 1.529 CiteScore 2.24
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.031 SNIP 1.228 CiteScore 2.13
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.891 SNIP 1.329
Web of Science (2010): Indexed yes
Communities of practices as means to develop creativity at work

To cope with the frequent changes healthcare professionals must be creative. A Community of Practice (CoP) is a relational work community based on voluntary participation by practitioners of a particular work (e.g. intensive care unit nursing or maintenance of machine X) that interact and improve their practice. CoP are known for inducing a propensity to develop knowledge and foster creativity as practitioners interact and build relations, share ideas and discuss experiences. Communities of Practice are often developed as a part of knowledge management initiatives. However, knowledge about how to develop CoP is still incomplete. This papers reports on an intervention study that contributes to the CoP field through the design and test of a method for CoP development within operations. The study contributes with knowledge about the design of a CoP start-up process and about connecting the CoP with the organization. We propose a method to develop CoP and the method is tested in a blood analysis unit at 'Nordsjællands Hospital' in Denmark and the effect on creativity is evaluated. In order to develop the CoP the following interventions took place: The manager was introduced to CoP theory. The practice was operationalized narrowly as employees performing a specific operational task frequently and experiencing recurring problems. A voluntary CoP facilitator was identified and introduced to CoP theory. She then invited her colleagues to participate in the CoP. The facilitator arranged the start-up workshop where CoP participants were introduced to the timeline, the purpose of the CoP and templates to support collaboration. The facilitator arranged the following CoP meetings.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Jørgensen, R. (Intern), Edwards, K. (Intern)
Pages: 93-94
Publication date: 2017

Host publication information
Title of host publication: Conference proceedings of NES 2017 "Joy at work"
ISBN (Print): 978-91-7753-152-4
Main Research Area: Technical/natural sciences
Conference: NES 2017 "Joy at work", Lund, Sweden, 20/08/2017 - 20/08/2017
Electronic versions:
Pages_from_NES2017_PROCEEDINGS_FINAL_Skyddad.pdf
Source: PublicationPreSubmission
Source-ID: 139596749
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017
Company-University Collaboration Types As A Determinant For Knowledge Transfer
This paper develops a framework for a novel measurement of outcomes of different types of company-university collaboration. We test whether the level of formalization and the type of interaction influences the outcomes, in particular knowledge transfer. We extend the existing research by applying novel statistical computational methods form the field of natural language processing to identify the knowledge transfer. We investigate how the level of formalization of collaboration affects the knowledge transfer between universities and companies. Preliminary results indicate that we are able to identify additional forms of knowledge transfer and give companies insights into their potential benefits from different types of relationships. We propose a new perspective that enables companies to shape and adapt their external knowledge search as effective as possible.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Department of Management Engineering, Technology and Innovation Management
Authors: Woltmann, S. (Intern), Alkærsig, L. (Intern)
Number of pages: 7
Publication date: 2017
Main Research Area: Technical/natural sciences
Electronic versions:
Knowledge_transfer.pdf
Source: PublicationPreSubmission
Source-ID: 138869773
Publication: Research - peer-review › Paper – Annual report year: 2017

Comparative LCA of repairing flooded houses versus construction of a dam

General information
State: Published
Organisations: Department of Environmental Engineering, Urban Water Systems, Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Hennequin, T. (Intern), Sørup, H. J. D. (Intern), Dong, Y. (Intern), Arnbjerg-Nielsen, K. (Intern)
Number of pages: 1
Publication date: 2017

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Title of host publication: Book of Abstracts Sustain 2017
Place of publication: Kgs. Lyngby, Denmark
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Article number: Sustain Abstract L-14
Main Research Area: Technical/natural sciences
Conference: Sustain 2017, Kgs. Lyngby, Denmark, 06/12/2017 - 06/12/2017
Electronic versions:
ABSTRACT BOOK
SustainAbstracts2017c.compressed_110.pdf
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

Comparing three methods for participatory simulation of hospital work systems
Summative Statement: This study compared three participatory simulation methods using different simulation objects: Low resolution table-top setup using Lego figures, full scale mock-ups, and blueprints using Lego figures. It was concluded the three objects by differences in fidelity and affordance addressed different elements of a hospital work system.

Problem statement: Different methods for simulating the future work system for healthcare professionals have been applied in a number of green field and renovation design projects of hospitals in Denmark. The methods differed in the type of simulation objects representing the work system. Hence, this was an opportunity to study if these differences influenced which elements of a work system were in focus when healthcare professionals simulated and evaluated future work. Preliminary observations indicated this was the case but it was not understood how and why this influence took place.

Research Objective / Question: How does the simulation object influence which elements of a work system are being evaluated in participatory simulation events?

Methodology: Observation notes and video recordings of three types of simulation events using different objects were analyzed in respect to which elements of a work system were being targeted. A work system was defined as consisting of human work practices embedded in the three interdependent dimensions: space, organization and technology. All
Simulation events were based on participants playing clinical scenarios using the objects.

Results: Full scale mock-ups significantly addressed the local space and technology/tool elements of a work system. In contrast, the table-top simulation object addressed the organizational issues of the future work system. The blueprint based simulation addressed the organizational issues in combination with a global space outlook, e.g. the layout of an entire department.

Discussion: It is proposed that the simulation objects influence on work system focus is based on two attributes: Fidelity and affordance. Fidelity concerns the degree of resolution or the level of detail of what are being manifested by the simulation object. The affordance is a property of the object concerning how simulation participants will perceive how it may be used. When having a low-resolution model of a work system as in the table-top setup it is much easier to test a number of “what if” scenarios on how to organize the work in different spatial layouts. In addition to the object attributes other factors may play a role in what work system elements are being addressed. An important one seems to be at which point in the hospital design process the simulation is carried out.

Conclusions: Different simulation objects may to a certain degree influence what part of a work system is being addressed in participatory simulation events. For human factors practitioners in hospital design projects it is important to pay attention to this when planning and facilitating simulation events to evaluate different designs.

**General information**
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Organisations: Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems, Transport DTU
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Main Research Area: Technical/natural sciences

Comparison between young male drivers' self-assessed and objectively measured driving skills
Self-assessment of skills is a self-generated feedback process that contributes to confidence in one’s skills. The higher one’s self-assessed skills, the more likely one is to feel competent a particular domain thereby influencing the related behaviors. Drivers' self-assessed driving skills are not always accurate, which may cause serious problems such as underestimation of risk, reckless driving and accidents. Most previous research on self-assessment of driving skills did not compare self-reported skills to objectively measured driving skills, so the aim of this study was to test the accuracy of young male drivers' self-assessments of driving skills using a driving simulator, and to examine whether self-assessment accuracy varied with driving skill, experience or sensation-seeking propensity. Results showed that the drivers' self-assessments were inconsistent with their driving performance, and this inconsistency varied with driving skill, driving experience and sensation-seeking propensity in a safety-critical way.

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Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU, University of Queensland
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Comparison of the impacts of urban development and climate change on exposing European cities to pluvial flooding

The economic and human consequences of extreme precipitation and the related flooding of urban areas have increased rapidly over the past decades. Some of the key factors that affect the risks to urban areas include climate change, the densification of assets within cities and the general expansion of urban areas. In this paper, we examine and compare quantitatively the impact of climate change and recent urban development patterns on the exposure of four European cities to pluvial flooding. In particular, we investigate the degree to which pluvial floods of varying severity and in different geographical locations are influenced to the same extent by changes in urban land cover and climate change. We have selected the European cities of Odense, Vienna, Strasbourg and Nice for analyses to represent different climatic conditions, trends in urban development and topographical characteristics. We develop and apply a combined remote-sensing and flood-modelling approach to simulate the extent of pluvial flooding for a range of extreme precipitation events for historical (1984) and present-day (2014) urban land cover and for two climate-change scenarios (i.e. representative concentration pathways, RCP 4.5 and RCP 8.5). Changes in urban land cover are estimated using Landsat satellite imagery for the period 1984-2014. We combine the remote-sensing analyses with regionally downscaled estimates of precipitation extremes of current and expected future climate to enable 2-D overland flow simulations and flood-hazard assessments. The individual and combined impacts of urban development and climate change are quantified by examining the variations in flooding between the different simulations along with the corresponding uncertainties. In addition, two different assumptions are examined with regards to the development of the capacity of the urban drainage system in response to urban development and climate change. In the "stationary" approach, the capacity resembles present-day design, while it is updated in the "evolutionary" approach to correspond to changes in imperviousness and precipitation intensities due to urban development and climate change respectively. For all four cities, we find an increase in flood exposure corresponding to an observed absolute growth in impervious surfaces of 7-12% during the past 30 years of urban development. Similarly, we find that climate change increases exposure to pluvial flooding under both the RCP 4.5 and RCP 8.5 scenarios. The relative importance of urban development and climate change on flood exposure varies considerably between the cities. For Odense, the impact of urban development is comparable to that of climate change under an RCP 8.5 scenario (2081-2100), while for Vienna and Strasbourg it is comparable to the impacts of an RCP 4.5 scenario. For Nice, climate change dominates urban development as the primary driver of changes in exposure to flooding. The variation between geographical locations is caused by differences in soil infiltration properties, historical trends in urban development and the projected regional impacts of climate change on extreme precipitation. Developing the capacity of the urban drainage system in relation to urban development is found to be an effective adaptation measure as it fully compensates for the increase in runoff caused by additional sealed surfaces. On the other hand, updating the drainage system according to changes in precipitation intensities caused by climate change only marginally reduces flooding for the most extreme events.

General information
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BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 4.22 SJR 2.216 SNIP 1.624
We present a solution method for the liner shipping network design problem which is a core strategic planning problem faced by container carriers. We propose the first practical algorithm which explicitly handles transshipment time limits for all demands. Individual sailing speeds at each service leg are used to balance sailing speed against operational costs, hence ensuring that the found network is competitive on both transit time and cost. We present a matheuristic for the problem where a MIP is used to select which ports should be inserted or removed on a route. Computational results are presented showing very promising results for realistic global liner shipping networks. Due to a number of algorithmic enhancements, the obtained solutions can be found within the same time frame as used by previous algorithms not handling time constraints. Furthermore, we present a sensitivity analysis on fluctuations in bunker price which confirms the
applicability of the algorithm.

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Organisations: Department of Management Engineering, Management Science, Operations Research
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Complexity management in the food industry
The many stakeholders in the food industry with their diverse interests make this industry complex and interesting to work with. There are four main stakeholders; 1) The customers with their increased demand for customized products, quick delivery times and increased responsiveness, 2) The authorities with increased legislations, 3) Employees with salary demands and 4) owners/shareholders with profit wishes add to the complexity. Furthermore, markets are getting bigger and the competition harder. The profit margin for many companies is getting smaller. There are a demand for quantifying this complexity and finding a method for using these complexity factors in economic calculations. The research question this paper seeks to address is therefore “Which complexity factors can be quantified in the food industry and how can they be used in economic calculations?” A case study of a SME Danish bread producer will address the research question due to the explorative nature of this study and the limited amount of previous research within this field.

Complexity of Configurators Relative to Integrations and Field of Application
Configurators are applied widely to automate the specification processes at companies. The literature describes the industrial application of configurators supporting both sales and engineering processes, where configurators supporting the engineering processes are described more challenging. Moreover, configurators are commonly integrated to various IT systems within companies. The complexity of configurators is an important factor when it comes to performance, development and maintenance of the systems. A direct comparison of the complexity based on the different application and IT integrations is not addressed to a great extent in the literature. Thus, this paper aims to analyse the relationship of the complexity of the configurators, which is based on parameters (rules and attributes), in terms of first different applications of configurators (sales and engineering), and second integrations to other IT systems. The research method adopted in the paper is based on a survey followed with interviews where the unit of analysis is based on operating configurators within a company.
Comprehensive Assessment of Human Health Impacts and Benefits of Fruits and Vegetables in a LCA Context

Nutritional effects from the ‘use stage’ of the life cycle of food products can have a substantial effect on human health; yet, they are often not considered in life cycle assessment (LCA). In this study we explore the trade-offs between environmental and nutritional health effects associated with increased consumption of fruits and vegetables in the US diet. We employ the Combined Nutritional and Environmental Life Cycle Assessment (CONE-LCA) framework that compares environmental and nutritional effects of foods in a common endpoint metric, Disability Adjusted Life Years (DALY). Starting from one serving of 161 g fruits and 123 g vegetables as functional unit (FU), associated life cycle emissions, e.g. greenhouse gases and particulate matter (PM) precursors, and intake of pesticide residues in food are linked to health impacts in DALY/FU. Global warming and PM human health impacts are assessed following a traditional LCA approach. For PM, we couple emissions with an epidemiology-based dose-response to estimate impacts. For pesticide residues exposure, we use publically available health impacts derived by combining exposure modelling of pesticide residue with toxicological studies for numerous pesticide active ingredients. The nutritional assessment is based on effect factors estimated using the 2010 health burden attributable to corresponding dietary risk factors in DALY from the global burden of disease (GBD) and daily consumption food consumption based on the National Health and Nutrition Examination Survey (NHANES) 2009-2012. One fruits serving is linked to 0.07 g PM2.5-eq (0.03 g PM2.5-eq/serving vegetables, Figure 1), 40% due to NH3 as PM precursor, corresponding to 0.08 μ DALY (0.03 μ DALY/serving vegetables). From a nutritional perspective, adding one serving of fruits to the average US diet could result in an avoided health impact of 19.0 μ DALY (respective avoided impact for vegetables: 5.25 μ DALY). Overall, adding one fruits serving to the average US diet may lead to substantial health benefits: nutrition-related avoided impact (benefit) is 50 times higher than environmental health impacts (Figure 2). The benefit is slightly enhanced when increased fruit intake is substituted by food associated with adverse health outcomes, such as trans-fat and red meat, with the benefit mainly linked to avoided nutritional health impact. Benefits exceed impacts even when considering an uncertainty factor of 400 for the impacts due to pesticide residues for the increased fruit consumption scenario but not for the increased vegetable consumption scenario. THE CONE-LCA framework enables the comparison of environmental and nutritional impacts and benefits of food items on human health using a common metric. The preliminary results of this case study indicate the importance of considering nutritional effects in food-LCA and suggest that nutritional health effects of food items, and specifically of fruits and vegetables, can be substantial compared to environmental impacts. This approach could be extended to other human health impacts (e.g. water use) and used in making sustainable diets decisions. [GRAPHICS]
The paper describes an approach to deriving interval-valued reliability measures given partial statistical information on the occurrence of failures. We apply methods of optimal control theory, in particular, Pontryagin's principle of maximum to solve the non-linear optimisation problem and derive the probabilistic interval-valued quantities of interest. It is proven that the optimisation problem can be translated into another problem statement that can be solved on the class of piecewise continuous probability density functions (pdfs). This class often consists of piecewise exponential pdfs which appear as soon as among the constraints there are bounds on a failure rate of a component under consideration. Finding the number of switching points of the piecewise continuous pdfs and their values becomes the focus of the approach described in the paper. Examples are provided.
Imprecise reliability, Control theory, Pontryagin's principle of maximum, Bounded failure rate
Conceptual Modelling for Product Configuration Systems

Individual customization of goods and processes in different industries leads to complexity due to a growing mix of products both regarding characteristics of products and support services. In order to eliminate complexity and challenges in product/process customizing, smart IT systems called Product Configuration Systems (PCS), have been proposed as the solution both by researchers and practitioners and various benefits are mentioned from utilizing PCSs. Based on the latest literature, there are challenges reported in all phases of PCS projects including planning, development, and documentation. Moreover, the challenges become more serious when it involves complicated products/processes in engineer-to-order (ETO) companies. The purpose of this thesis is to contribute to the existing knowledge of managing PCS projects by proposing frameworks and tools to address some of the main challenges.

First, this research focuses on the reported benefits and challenges in different phases of PCS projects aligned with the gaps in the current literature. Second, the study presents a survey in order to have a comprehensive overview to assess the most important challenges in the area. Third, in order to overcome different challenges in the PCS projects, the study contributes to the literature in forms of different frameworks, tools and IT solutions. Addressing the defined challenges, the following frameworks are proposed. 1) A framework is provided for business cases in PCS projects in order to estimate the needed investments and financial return-on-investment. 2) Furthermore, the research proposes a framework and different tools to scope the whole PCS project from planning to the maintenance phase. 3) Afterwards, the study suggests a framework to manage the knowledge in PCS projects due to reported challenges. 4) In order to make it possible to model, maintain, communicate, and document complicated products/process, a framework aligned with an IT tool is developed in close collaboration with industry. 5) Finally, the study contributes to the direction of integration of PCS and other IT systems by showing the automation impact of this alignment.

The tools and frameworks developed have been evaluated based on existing literature and by empirical tests in companies. Furthermore, areas for further investigation have been identified.

General information
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Organisations: Department of Mechanical Engineering, Engineering Design and Product Development, Operations Management, Department of Management Engineering, Management Science
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Connecting strategy and execution in global R&D
The paper investigates the relationship between global product development strategic decisions, which include outsourcing, offshoring practices as well as strategic alliances, and their impact on the day-to-day business in a global and open innovation context. By adopting an exploratory inductive research, founded on core literature in the area and using empirical data from four companies in different industries, the study intends to understand the interconnection between the shift toward a global R&D strategy, and the dependent changes at the operational and managerial level. The series of changes in the innovation network are strictly connected with the company's source of competitive advantage, their internationalisation drivers, the internationalisation practices adopted, and the series of organisational capabilities needed to support the internationalization as well as externalization of innovation sources. Topics: Design organisation and management, Design to advance resource-limited societies, Design research applications and case studies, Design to embrace resource limitations

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Organisations: Department of Management Engineering, Management Science, Operations Management
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Considerations for reducing food system energy demand while scaling up urban agriculture: Letter

There is an increasing global interest in scaling up urban agriculture (UA) in its various forms, from private gardens to sophisticated commercial operations. Much of this interest is in the spirit of environmental protection, with reduced waste and transportation energy highlighted as some of the proposed benefits of UA; however, explicit consideration of energy and resource requirements needs to be made in order to realize these anticipated environmental benefits. A literature review is undertaken here to provide new insight into the energy implications of scaling up UA in cities in high-income countries, considering UA classification, direct/indirect energy pressures, and interactions with other components of the food-energy-water nexus. This is followed by an exploration of ways in which these cities can plan for the exploitation of waste flows for resource-efficient UA. Given that it is estimated that the food system contributes nearly 15% of total US energy demand, optimization of resource use in food production, distribution, consumption, and waste systems may have a significant energy impact. There are limited data available that quantify resource demand implications directly associated with UA systems, highlighting that the literature is not yet sufficiently robust to make universal claims on benefits. This letter explores energy demand from conventional resource inputs, various production systems, water/energy trade-offs, alternative irrigation, packaging materials, and transportation/supply chains to shed light on UA-focused research needs. By analyzing data and cases from the existing literature, we propose that gains in energy efficiency could be realized through the co-location of UA operations with waste streams (e.g. heat, CO2, greywater, wastewater, compost), potentially increasing yields and offsetting life cycle energy demands relative to conventional approaches. This begs a number of energy-focused UA research questions that explore the opportunities for integrating the variety of UA structures and technologies, so that they are better able to exploit these urban waste flows and achieve whole-system reductions in energy demand. Any planning approach to implement these must, as always, assess how context will influence the viability and value added from the promotion of UA.
Considering built environment and spatial correlation in modelling pedestrian injury severity

This study looks at mitigating and aggravating factors that are associated with the injury severity of pedestrians when they have crashes with another road user and overcomes existing limitations in the literature by posing attention on the built environment and considering spatial correlation across crashes. Reports for 6539 pedestrian crashes occurred in Denmark between 2006 and 2015 were merged with geographic information system resources containing detailed information about built environment and exposure at the crash locations. A linearised spatial logit model estimated the probability of pedestrians to sustain a severe or fatal injury conditional on the occurrence of a crash with another road user. This study confirms previous findings about older pedestrians and intoxicated pedestrians being the most vulnerable road users, and crashes with heavy vehicles and in roads with higher speed limits being related to the most severe outcomes. This study provides also novel perspectives by showing positive spatial correlation of crashes with the same severity outcome and emphasising the role of the built environment in the proximity of the crash. This study emphasises the need for thinking about traffic calming measures, illumination solutions, road maintenance programs and speed limit reductions. Moreover, this study emphasises the role of the built environment, as shopping areas, residential areas, and walking traffic density are positively related to a reduction in pedestrian injury severity. Often, these areas have in common a larger pedestrian mass that is more likely to make other road users more aware and attentive, while the same does not seem to apply to areas with lower pedestrian density.
Considering passenger and operator inconvenience in the scheduling of large railway projects
The continued development and renewal of railway infrastructure and technology is necessary to enable railway operators to provide high quality services subject to ever increasing demand. However, the execution of large infrastructure projects causes disturbances in the network due to the occupation of infrastructure over extended periods of time. In this paper we propose a multiobjective project scheduling optimization model for railway infrastructure projects that takes inconvenience caused to users of the infrastructure into account. We illustrate how the model can be used in an interactive way by planners based on their preferences, and we show that Pareto optimal solutions can be found in reasonable time using instances with realistic features. The result is a decision support model to aid infrastructure project planners in ensuring that passenger and operator inconvenience are also taken into account.

General information
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BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.989 SNIP 2.903
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Scopus rating (2009): SJR 2.39 SNIP 2.832
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Consistent cost curves for identification of optimal energy savings across industry and residential sectors

Energy savings are a key element in reaching ambitious climate targets and may contribute to increased productivity as well. For identification of the most attractive saving options cost curves for savings are constructed illustrating potentials of savings with associated costs. In optimisation modelling these cost options are then compared with the cost of producing energy and all savings with negative costs and cost below the cost of producing the energy including the associated externality costs are expected to be implemented. There are however several methodological issues associated with constructing and applying the cost curves in modelling: • Cost curves do not have the same cost interpretation across economic subsectors and end-use technologies (investment cost for equipment varies – including/excluding installation – adaptation costs – indirect production costs) • The time issue of when the costs are incurred and savings (difference in discount rates both private and social) • The issue of marginal investment in a case of replacement anyway or a full investment in the energy saving technology • Implementation costs (and probability of investment) differs across sectors • Cost saving options are not additive - meaning that marginal energy savings from one option depends on what other options implemented We address the importance of these issues and illustrate with Danish cases how large the difference in savings cost curves can be if different methodologies are used. For example, the difference between marginal investment costs in residential heating of a more efficient building element (windows) in a larger renovation project compared to the costs of just replacing the windows. This is done based on some of the results from Zvingilaite & Klinge Jacobsen 2016. We compare to the results found for residential savings in Giraudet et. al. 2012 and Amstalden et. al. 2007. For our case the resulting savings potential below a given level of costs can be up to a factor of 5 times larger if only the marginal cost measure is used. For national energy plan strategies this results in much more emphasis on energy savings, than renewable energy expansion as a way to achieve fossil fuel reductions if it is possible to implement all heating savings with their marginal costs. As saving potentials are not additive for savings in a specific end-use entity it is difficult to compare savings in one sector comprising many options together and single options in another sector. We illustrate that a saving option in one sector (eg a more efficient pump) would be difficult to compare with the savings from replacing an entire production line in a factory with a more efficient one. If the average cost of the two are compared then probably the efficient pump would be preferred due to low costs compared to the full production line. This would leave out the elements of the production line where independent savings investments might have cost that are just as low as for the pump. We argue that comparing across sectors should be carried out with similar sets of savings options (small individual replacements in each sector, and comparable larger technology switches in each sector).
**Constraints and Creativity in NPD - Testing the Impact of 'Late Constraints'**

The aim of the presented work is to investigate how the timing of project constraints can influence the creativity of the output in New Product Development (NPD) projects. When seeking to produce a creative output, is it beneficial to know all constraints when initiating a project, or will constraints introduced throughout a project potentially lead to a more creative output? While the relationship between constraints and creativity is fairly well studied, the question of how introducing constraints late in a project can influence creativity is still unanswered. A single factor, two level experiment was conducted, involving 12 teams of industrial designers from three different countries, each team working on two 30 minutes design tasks. In one condition all constraints were given at the start, and in the other one new radical constraint was added after 12 minutes. The output from all 24 tasks was assessed for creativity using the Consensual Assessment Technique (CAT), and a comparative within-subjects analysis found no significant different between the two conditions. Controlling for task and assessor a small but non-significant effect was found, in favor of the ‘late constraint’ condition. Thus, in the presented setup no negative impact of adding radically new constraints during a project was found, highlighting for managers that it is not crucial to a project’s creative output to have all constraints from the beginning.

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**Consumer’s Attitude Towards Investments in Residential Energy-Efficient Appliances: How End-User Choices Contribute to Change Future Energy Systems**

The proliferation of increasingly energy-efficient (EE) appliances is a key strategy to address the impacts of rising residential electricity demand (Danish Energy Agency 2017). To this end, governments and institutions are interested in understanding the drivers of consumer choice between conventional and environmentally friendly alternatives when purchasing new household electric appliances. This study employs empirical data from a survey conducted by the Danish Energy Agency to model the decision criteria behind Danish consumer investment in energy-efficient labeled appliances. The analysis uses logistic regression over a set of socioeconomic, demographic, and behavioral variables to predict purchase propensities. The findings are relevant for policy makers interested in targeting consumers in the appliance market, particularly for a relatively wealthy national context. The study concludes by integrating the predicted propensities with an energy-systems model to assess the nation-wide impact of efficient appliances’ uptake in terms of electricity, emissions and economic savings.

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Organisations: Department of Management Engineering, Systems Analysis, Management Science, Operations Research
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**Container shipping service selection and cargo routing with transshipment limits**

We address the tactical planning problem faced by container liner shipping companies to select a set of sailing services from a given pool of candidate services and route available cargo over the chosen services so as to maximize profit. One of the distinctive features of our model is that it incorporates limits on the number of transshipments for each container, a common service requirement in practice. These limits can vary by shipment attributes such as origin and destination, and cargo priority. We propose a new stage-indexed multi-commodity flow model that is based on an augmented network containing links (representing sub-paths) between every pair of ports visited by a candidate service. This sub-path structure, together with our approach of indexing the flow variables by transportation stage, enables the model to accurately capture transshipment costs and enforce transshipment limits. To reduce the computational time to solve this problem, we develop preprocessing steps that exploit network structure to eliminate variables, describe valid inequalities to strengthen the model's linear programming relaxation, and propose an optimization-based heuristic algorithm to generate good initial solutions. We report successful computational results for realistic problem instances from a benchmark suite of liner shipping problems, solved using a standard solver applied to our reduced and strengthened model.

**General information**

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Scopus rating (2015): SJR 2.334 SNIP 2.412 CiteScore 3.59  
Web of Science (2015): Indexed yes  
BFI (2014): BFI-level 1  
Scopus rating (2014): SJR 2.186 SNIP 2.485 CiteScore 3.21  
Web of Science (2014): Indexed yes  
BFI (2013): BFI-level 1  
Scopus rating (2013): SJR 2.346 SNIP 2.735 CiteScore 3.25  
ISI indexed (2013): ISI indexed yes  
Web of Science (2013): Indexed yes  
BFI (2012): BFI-level 1  
Scopus rating (2012): SJR 2.418 SNIP 2.588 CiteScore 3.01  
ISI indexed (2012): ISI indexed yes  
Web of Science (2012): Indexed yes  
BFI (2011): BFI-level 1  
Scopus rating (2011): SJR 2.401 SNIP 2.441 CiteScore 3.02  
ISI indexed (2011): ISI indexed yes  
Web of Science (2011): Indexed yes  
BFI (2010): BFI-level 1  
Scopus rating (2010): SJR 2.477 SNIP 2.435  
Web of Science (2010): Indexed yes
Contribution of organic farming to public goods in Denmark
The potential contribution of organic farming to the public goods, ‘Nature and Biodiversity’, ‘Environment’, ‘Energy and Climate’, ‘Human Health and Welfare’ and ‘Animal Health and Welfare’ in Denmark is guided and partly secured by the principles and specific requirements of the EU Organic Regulation. However, other factors, such as the production type, farm size, geographical location and—not the least—the management of the farm, also influence the contribution. Using the ban on synthetic pesticides and restricted use of antibiotics, including the requirements to compensate for and prevent such uses in organic farming, as examples, the positive and negative contributions of organic farming in relation to selected public goods were analysed. The contributions of organic farming to Nature and Biodiversity and Human and Animal Health and Welfare are mainly positive compared to conventional farming for all farm types, whilst the effects on Environment and Energy and Climate are mixed; i.e. some effects are positive and others are negative. The analysis revealed a need for further documentation and revision of the organic principles and specific organic requirements in particular in relation to the public goods Energy and Climate, which at present are not addressed in the EU Organic Regulation. Moreover, some organic farming requirements and practices cause dilemmas; e.g. more space per animal and outdoor access improves Animal Health and Welfare but at the same time has negative effects on Environment, Energy Consumption and Climate Change. These dilemmas should be solved before OA may be fully attractive as an integrated policy measure supporting jointly several public goods objectives.

General information
State: Published
Organisations: National Food Institute, Department of Management Engineering, Systems Analysis, International Centre for Research in Organic Food Systems (ICROFS), Seges Knowledge Centre for Agriculture, Aarhus University
Authors: Jespersen, L. M. (Ekstern), Baggesen, D. L. (Intern), Fog, E. (Ekstern), Halsnæs, K. (Intern), Hermansen, J. E. (Ekstern), Andreasen, L. (Ekstern), Strandberg, B. (Ekstern), Sørensen, J. T. (Ekstern), Halberg, N. (Ekstern)
Number of pages: 24
Pages: 243-266
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication Information
Journal: Organic Agriculture
Volume: 7
Issue number: 3
ISSN (Print): 1879-4238
Contributions of Local Farming to Urban Sustainability in the Northeast United States

Food consumption is an important contributor to a city’s environmental impacts (carbon emissions, land occupation, water use, etc.) Urban farming (UF) has been advocated as a means to increase urban sustainability by reducing food-related transport and tapping into local resources. Taking Boston as an illustrative Northeast U.S. city, we developed a novel method to estimate sub-urban, food-borne carbon and land footprints using multiregion-input-output modeling and nutritional surveys. Computer simulations utilizing primary data explored UF’s ability to reduce these footprints using select farming technologies, building on previous city-scale UF assessments which have hitherto been dependent on proxy data for UF. We found that UF generated meagre food-related carbon footprint reductions (1.1–2.9% of baseline 2211 kg CO₂ equivalents/capita/annum) and land occupation increases (<1% of baseline 9000 m² land occupation/capita/annum) under optimal production scenarios, informing future evidence-based urban design and policy crafting in the region. Notwithstanding UF’s marginal environmental gains, UF could help Boston meet national nutritional guidelines for vegetable intake, generate an estimated $160 million U.S. in revenue to growers and act as a pedagogical and community building tool, though these benefits would hinge on large-scale UF proliferation, likely undergirded by environmental remediation of marginal lands in the city.

General information
State: Published
Organisations: Quantitative Sustainability Assessment, Department of Management Engineering, Massachusetts Institute of Technology
Authors: Goldstein, B. P. (Intern), Hauschild, M. Z. (Intern), Fernandez, J. E. (Ekstern), Birkved, M. (Intern)
Number of pages: 10
Pages: 7340-7349
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Environmental Science and Technology
Volume: 51
Issue number: 13
ISSN (Print): 0013-936X
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.26 SJR 2.538 SNIP 1.889
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.584 SNIP 1.828 CiteScore 5.61
Web of Science (2015): Indexed yes
Correction to Development of Comparative Toxicity Potentials of TiO₂ Nanoparticles for Use in Life Cycle Assessment

General information
State: Published
Organisations: Quantitative Sustainability Assessment, Department of Environmental Engineering, Environmental Chemistry, Department of Management Engineering, Technical University of Denmark, Quantis, Radboud University Nijmegen

Original language: English
DOIs: 10.1021/acs.est.7b01011
Source: FindIt
Source-ID: 2371666635
Publication: Research - peer-review › Journal article – Annual report year: 2017
Cost-competitiveness of organic photovoltaics for electricity self-consumption at residential buildings: A comparative study of Denmark and Greece under real market conditions

To address sustainability challenges, photovoltaics (PV) are regarded as a promising renewable energy technology. Decreasing PV module costs and increasing residential electricity prices have made self-consumption of PV-generated electricity financially more attractive than exporting to the grid. Organic photovoltaics (OPV) are an emerging thin-film PV technology that shows promise of greatly improving the environmental and economic performances of PV technologies. Previous studies have estimated the current and future costs of OPV technologies, but the attractiveness of investing in OPV systems has not been evaluated under real market conditions, especially under PV self-consumption schemes. In this study, we investigate the self-consumption of electricity generation from conventional and organic PV systems installed at residential houses in two different countries, Denmark and Greece, under current PV regulatory frameworks. We then focus on modelling and assessing the cost-competitiveness of organic PV technologies based on cost estimations for existing pilot-scale (kW-range), and projected scale-up (100MW) and industrial-scale (100GW) manufacturing capacity levels. Our generic results applying to all PV technologies show that PV systems installed at residential houses in Greece perform economically better than those in Denmark do in terms of self-sufficiency and gross electricity bill savings (i.e. excluding PV costs). Using the two country cases, which present very different settings, we characterise and discuss the influence of three key parameters of the economic performance of PV systems, namely the PV regulatory scheme, the solar irradiation level and the temporal match between the electricity consumption and solar irradiation profiles. Focusing on organic PV systems developed in an industrial-scale cost setting (1.53€/Wp), we find that they deliver significant electricity bill savings for residential houses in Greece (38%) under current conditions, while they may not be sufficiently attractive for residential houses in Denmark (6.5%) due to mainly the different PV regulatory schemes. Based on these findings, we therefore recommend investors interested in renewable energy technologies to pursue scaling up the manufacturing capacity of OPV technologies, as well as assess a large number of countries to identify and prioritise financially attractive settings for PV self-consumption.
Background. Games can be great pedagogical tools for educators and students. COTS games (commercial-off-the-shelf) are designed for the pure purpose of leisure but can also contain educational value. Aim. In this paper, we address the potential of COTS games as serious games. We develop an interpretive evaluation framework that can identify the educational value in COTS games.

Application. The presented framework can create evaluative profiles of the learning, social, game, and immersive mechanics of COTS games as educational tools. Moreover, the framework can position COTS games between four
interwoven dimensions, namely pedagogical, design, knowledge, and sociotechnical considerations. Demonstration. To validate the practical application of the interpretive framework, we apply it to a real-world example. Our demonstration reveals the usefulness of the framework. Conclusions. The framework enables critical reflection on the game mechanics; thereby capturing the complexity of the game mechanics that makes COTS game both educational and fun to play.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Vidensemergens APS
Authors: Ulrich, F. (Intern), Helms, N. H. (Forskerdatabase)
Pages: 695-714
Publication date: 2017
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Journal: Simulation & Gaming
Volume: 48
Issue number: 5
ISSN (Print): 1046-8781
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.24 SJR 0.411 SNIP 1.036
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.625 SNIP 1.126 CiteScore 1.46
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.466 SNIP 1.016 CiteScore 0.84
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.443 SNIP 1.061 CiteScore 1.21
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.03 SNIP 2.194 CiteScore 1.73
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.697 SNIP 1.934 CiteScore 1.41
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.374 SNIP 1.131
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.272 SNIP 0.708
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.331 SNIP 1.324
Scopus rating (2007): SJR 0.293 SNIP 0.817
Scopus rating (2006): SJR 0.251 SNIP 0.935
Scopus rating (2005): SJR 0.312 SNIP 1.029
Scopus rating (2004): SJR 0.276 SNIP 0.549
Scopus rating (2003): SJR 0.224 SNIP 0.444
Scopus rating (2002): SJR 0.215 SNIP 0.948
Scopus rating (2001): SJR 0.221 SNIP 0.627
Scopus rating (2000): SJR 0.233 SNIP 0.812
Scopus rating (1999): SJR 0.144 SNIP 1.311
Original language: English
Electronic versions:
Creating_Evaluation_Profiles_for_Games_Designed_to_be_Fun_Preprint.pdf. Embargo ended: 01/05/2018
DOIs:
10.1177/1046878117709841
Source: PublicationPreSubmission
Source-ID: 131601735
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Creating proximity across distances – Management tools to support performance and employee well-being.

One consequence of organizations’ development and adaptation to societal changes and technological developments is distance work where time or geography separate employees and managers (Fisher & Fisher 2001). Distance work and management occur at different locations, such as from home (telework), in satellite offices (intra-organizational work), or at the customers’ or clients’ locations (interorganizational work) (Verburg et al. 2013; Cropper et al. 2008). In inter-organizations, distance employees are employed by one company (the provider) but work at a different company (the customer) (Cropper et al. 2008; Hinds & Kiesler 2002); here, the customer's working conditions influence the employee's well-being. Distance work and management are a characteristic in various types of knowledge work (Fisher & Fisher, 2001; Jacobs, 2004; Li & Scullion, 2006) where work-related stress is still an unsolved problem. When either time or geography separate managers from their employees, it becomes more difficult to ensure both the employees' psychosocial work environment and organizational performance. This paper explores distance managers' preventive activities that ensure both employee well-being and performance across distances as part of their daily management. The study contributes to the discussion on management of prevention of work-related stress in the context of distance work. We applied a case study approach to explore the tools distance managers make use of to ensure employee well-being and organizational performance. Data were collected with semi-structured interviews of both distance managers and their employees working in two types of knowledge work (Alvesson 2004) i.e. specialized manufacturing and consultancies in four inter-organizational distance work places. The researchers conducted 17 semi-structured interviews including questions about distance management practices and applied tools along with distance work experiences, especially regarding employee well-being and organizational performance. The dataset from the four companies consists of one manager from each company together with up to four of their distance workers located at their customers’ companies. The researchers coded the transcribed interviews using template analysis (King 1998) where the research question determined three a priori codes for the data analysis. This study shows that physical and social working conditions at the work sites, both nationally and internationally, directly affect the employees' well-being and thus their performance. As inter-organizational distance work deprives the employees with the ability to meet face-to-face with their manager the distance managers’ primary concern therefore is whether the employees perform as expected and according to plan and how they, as managers, can create a sense of proximity and belonging to the company. Dialogue with the distance workers is a core activity and conducted via Skype, phone, Lync or email. The frequency varies from weekly to monthly calls depending on the type of employee and the given situation. Focus in the calls is either on project related issues, which need to be solved, or the performance and well-being of the employees. The manager typically initiates the calls. Beside the direct contact via Skype, Lync and mobile phones, the managers also apply other management tools and practices to ensure well-being and monitoring performance. The managers thus conduct a systematic monitoring of their contact with their employees (who have they talked with and when). They also make use of ongoing individual follow-up surveys focusing on both well-being and performance to support the distance managers’ direct contact with their employees and to monitor changes in either of the two areas. In the direct contact with the employees they focus first on employee’s wellbeing and then on the performance (content) acknowledging that their well-being determines their performance. The dual focus is important as the distance managers recognize that the customers’ working conditions have a direct impact on the performance of the distance workers. Besides the direct contact with their employees, the study also shows that continuous expectancy alignment among the customer, employee, project manager and distance manager is an important tool to ensure both performance and well-being. Finally, the template analysis showed that distance workers highly value time to talk and management capabilities i.e. the listening, understanding and/or the acknowledging manager as ways to ensure their well-being – prevent them from being stressed. Acknowledging the impact distance has on management of prevention of work-related stress in the context of distance work future organizational intervention research should also consider the distance (time &/or geography) between the managers and employees but also who is responsible for the employees’ work environment. The study shows that distance managers apply more than just traditional IT communication tools in their management practice, and that well-being has first priority in the talks with the distance workers besides the focus on performance. The employees however value time to talk and management capabilities like the ability to listen, understand and acknowledge that good working conditions are a prerequisite for their well-being and consequently their performance.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Ipsen, C. (Intern), Poulsen, S. (Intern)
Number of pages: 2
Publication date: 2017
Event: Abstract from Work, Stress and Health 2017, Minneapolis, United States.
Main Research Area: Technical/natural sciences
Electronic versions:
DIMA_management_tools_Ipsen_and_Poulsen_Symposium_16313_.pdf
Source: PublicationPreSubmission
Source-ID: 143938542
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2018
Critical review of life cycle assessments conducted on aquaculture systems: identification of environmental improvements

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Bohnes, F. A. (Intern), Hauschild, M. Z. (Intern), Schlundt, J. (Intern), Laurent, A. (Intern)
Number of pages: 1
Publication date: 2017

Crop residues as a potential renewable energy source for Malawi's cement industry
Crop residues have been undervalued as a source of renewable energy to displace coal in the national energy mix for greenhouse emission reduction in Malawi. Switching to crop residues as an alternative energy source for energy-intensive industries such as cement manufacturing is hampered by uncertainties in crop residue availability, cost and quality. In this study, future demand for energy and availability of crop residues was assessed, based on data at the sub-national level. Detailed energy potentials from crop residues were computed for eight agricultural divisions. The results showed that the projected total energy demands in 2020, 2025 and 2030 were approximately 177 810 TJ, 184 210 TJ and 194 096 TJ respectively. The highest supply potentials were found to be in the central and southern regions of Malawi, coinciding with the locations of the two clinker plants. Crop residues could meet 45-57% of the national total energy demand. The demand from the cement industry is only 0.8% of the estimated biomass energy potential. At an annual production of 600 000 t of clinker and 20% biomass co-firing with coal, 18 562 t of coal consumption would be avoided and 46 128 t of carbon dioxide emission reduction achieved per year. For sustainability, holistic planning and implementation would be necessary to ensure the needs of various users of crop residues are met. Furthermore, there would be a need to address social, economic and environmental barriers of the crop residue-based biomass energy supply chain. Future research should focus on local residue-to-product ratios and their calorific values.

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, University of Malawi, Leadership for Environment and Development, Malawi University of Science and Technology
Authors: Gondwe, K. J. (Ekstern), Chiotha, S. S. (Ekstern), Mkandawire, T. (Ekstern), Zhu, X. (Intern), Painuly, J. P. (Intern), L. Taulo, J. (Ekstern)
Pages: 19-31
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Energy in Southern Africa
Volume: 28
Issue number: 4
ISSN (Print): 1021-447X
Ratings:
Web of Science (2018): Indexed yes
Scopus rating (2016): CiteScore 0.43
Scopus rating (2015): CiteScore 0.55
Scopus rating (2014): CiteScore 0.35
Scopus rating (2013): CiteScore 0.27
Scopus rating (2012): CiteScore 0.3
Scopus rating (2011): CiteScore 0.07
BFI (2008): BFI-level 1
Original language: English
Biomass energy, Clinker, CO2 emissions, Coal, Energy-intensive industry
Electronic versions: 03.pdf
Cyklistuheld – hvilken betydning har vejen, køretøjet og trafikanten


General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Technology and Innovation Management, Systems Analysis
Authors: Janstrup, K. H. (Intern), Møller, M. (Intern), Pilegaard, N. (Intern)
Number of pages: 13
Publication date: 2017
Conference: Trafikdage 2017, Aalborg, Denmark, 28/08/2017 - 28/08/2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Selected Proceedings from the Annual Transport Conference at Aalborg University
ISSN (Print): 1603-9696
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
BFI (2015): BFI-level 1
BFI (2014): BFI-level 1
BFI (2013): BFI-level 1
ISI indexed (2013): ISI indexed no
BFI (2012): BFI-level 1
ISI indexed (2012): ISI indexed no
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
ISI indexed (2011): ISI indexed no
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Original language: English
Electronic versions:
Cyklistuheld_hvilken_betydning_har_vejen_k_ret_jet_og_trafikanten_Trafikdage_2017.pdf
Source: PublicationPreSubmission
Source-ID: 141910372
Publication: Research › Conference article – Annual report year: 2017

Danish Energy Islands
Data-driven engineering design research: Opportunities using open data

Engineering Design research relies on quantitative and qualitative data to describe design-related phenomena and prescribe improvements for design practice. Given data availability, privacy requirements and other constraints, most empirical data used in Engineering Design research can be described as “closed”. Keeping such data closed is in many cases necessary and justifiable. However, this closedness also hinders replicability, and thus, may limit our possibilities to test the validity and reliability of research results in the field. This paper discusses implications and applications of using the already available and continuously growing body of open data sources to create opportunities for research in Engineering Design. Insights are illustrated by an examination of two examples: a study of open source software repositories and an analysis of open business registries in the cleantech industry. We conclude with a discussion about the limitations, challenges and risks of using open data in Engineering Design research and practice.
Dataset Documentation for the ERTMS-Oriented Signalling Maintenance in the Danish Railway System

This documentation provides information about the dataset generated as part of a PhD thesis (Towards Signalling Maintenance Scheduling Problem for European Railway Traffic Management System) for the signaling maintenance of the Danish railway system. The data instances (M.Pour 2018a; M.Pour 2018b) have been created for the purpose of adaptation to the newest railway signalling standard which is so called European Railway Traffic Management System (ERTMS). The chapter provides explanation of the different types of maintenance tasks in the ERTMS, followed by data definition. Furthermore, it presents information on how the dataset is created and how the software application generates each data file. Data generation is explained through a step by step procedure along with snapshots.

General information
State: Published
Organisations: Department of Management Engineering, Management Science
Authors: M. Pour, S. (Intern)
Number of pages: 13
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Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
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Publication: Research › Report – Annual report year: 2018

Decarbonizing Sweden's energy and transportation system by 2050

Decarbonizing Sweden's transportation sector is necessary to realize its long-term vision of eliminating net greenhouse gas (GHG) emissions from the energy system by 2050. Within this context, this study develops two scenarios for the transportation sector: one with high electrification (EVS) and the other with high biofuel and biomethane utilization (BIOS). The energy system model STREAM is utilized to compute the socioeconomic system cost and simulate an integrated transportation, electricity, gas, fuel refinery, and heat system. The results show that electrifying a high share of Sweden's road transportation yields the least systems cost. However, in the least-cost scenario (EVS), bioenergy resources account for 57% of the final energy use in the transportation sector. Further, a sensitivity analysis shows that the costs of different types of cars are the most sensitive parameters in the comparative analysis of the scenarios.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Bramstoft, R. (Intern), Skytte, K. (Intern)
Pages: 3-20
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: International Journal of Sustainable Energy Planning and Management
Volume: 14
ISSN (Print): 2246-2929
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.84 SJR 0.326 SNIP 0.114
BFI (2015): BFI-level 1
Defining specific problems in the Thai government hospital buildings. A study of architectural planning and space management of Maharaj hospital, Chiang Mai Thailand

The purpose of this paper is to present and analyse the preliminary results of fieldwork observation in one of the biggest government hospitals in Thailand – the Maharaj Hospital, Chiang Mai, Thailand. Hospitals in Thailand are the result of the imported concept from the European and American hospitals. The ideas of hospital architecture from Western countries have been adopted since the nineteenth century until the contemporary period. Many of the Thai government hospitals constructed between 1960s and 1970s are still in use. The government hospitals are expanding (incremental development) without considering long term effects in the hospital planning. Therefore, this study investigated what are the factors that cause the incremental development of medical buildings in the Thai government hospitals. Moreover, this study investigated the current situations in a Thai government hospital (Maharaj hospital) where the hospital spatial arrangement is affected by the incremental development. The methodology of this study is done by reviewing literature of the Thai hospital landscape, building assessment tools such as Usability, Space management, and USEtool concepts. Later, an empirical survey (walk-through observations) is conducted to explore daily situations in the Maharaj Government hospital where the hospital is facing the incremental development. Data was collected by documentation such as architectural drawings and photographs and architectural plan analysis was implemented to analyse the spatial arrangement of the Maharaj Hospital planning and identify problems caused by the incremental development. This paper synthesizes the findings from literature review of the Thai healthcare context and a walk-through observation in Maharaj hospital. According to the review of the Thai healthcare general context, there are three main factors that cause the incremental development of hospital buildings (1) the lack of local general practitioners and poor services of primary care offered by community healthcare centers (2) limited number of government hospital (3) the implementation of Thailand’s universal coverage scheme. These three factors resulted in easy access to government hospitals and dramatically increase of patient number. Therefore, hospitals need to expand to enable sufficient services for the high number of patients. Walk-through observations identify and emphasize the effects caused by the incremental development of hospital buildings. The results from empirical survey show that confusion of way-finding and the overlapping between waiting areas and non-clinical areas are the problems caused by the incremental development. The problems caused by incremental development was created by two factors (1) the lack of planning in hospital architecture (2) the lack of integration of the Thai culture in hospital design.

Delay estimation on a railway-line with smart use of micro-simulation

This paper formulates a delay propagation model that estimates total railway line delay as a polynomial function of a single primary delay. The estimate is derived from a finite series of delays over a horizon that spans two dimensions: the length of the railway line and the number of trains in the service plan. The paper shows that the total delay estimate is a cubic relation for small primary delays.

A probabilistic approach is presented to combine the total delay functions of primary delays given to different trains. The final estimate is the total delay on railway lines, after a random incident has occurred. The model can be integrated in railway timetable analysis to reduce the number of necessary simulations, and can be used when the computation speed is an issue, such as on-line rescheduling algorithms. The model is
Demonstrated with an analysis of a Danish suburban railway.

**General information**
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Management Science, Operations Management
Authors: Cerreto, F. (Intern), Harrod, S. (Intern), Nielsen, O. A. (Intern)
Pages: 867-874
Publication date: 2017

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DOI:
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Source-ID: 131444642
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Demand pattern analysis of taxi trip data for anomalies detection and explanation
Due to environmental and economic stress, strong investment exists now towards adaptive transport systems that can efficiently utilize capacity, minimizing costs and environmental impacts. The common vision is a system that dynamically changes itself (the supply) to anticipate traveler needs (the demand). In some occasions, unexpected and unwanted demand patterns are noticed in the traffic network that lead to system failures and cost implications. Significantly low speeds or excessively low flows at an unforeseeable time are only some of the phenomena that are often noticed and need to be explained for transport system’s better future response. The objective of this research is the formulation of a proper methodology that identifies anomalies on traffic networks and correlates them with special events using internet data. Our main subject of interest is the investigation of why traffic congestion is happening as well as why there are demand fluctuations in days were there are no apparent reasons for the occurrence of such phenomena. We evaluated our system using Google’s NYC taxi trips public dataset. We defined initially the “normality” baseline and thereunder we studied individual days’ demand patterns for outliers’ detection. Our approach enabled us to detect demand fluctuations, analyze and correlate them with disruptive events scenarios like extreme weather conditions, public holidays, religious festivities and parades. Using kernel density analysis, the affected areas as well as the significance of the observed differences compared to the average day are depicted.

**General information**
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling
Authors: Markou, I. (Intern), Rodrigues, F. (Intern), Pereira, F. C. (Intern)
Publication date: 2017

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Title of host publication: Proceedings of the 96th Annual Meeting of the Transportation Research Board
Main Research Area: Technical/natural sciences
Conference: 96th Annual Meeting of the Transportation Research Board, Washington, United States, 08/01/2017 - 08/01/2017
Electronic versions:
17_04252.pdf
Source: PublicationPreSubmission
Source-ID: 141986333
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

**Den langsigtede effekt af husstandsindkomst på pendlingsafstand**
Urbaniseringen i Danmark har været kraftig i det sidste årti, hvor flere større byer har oplevet eksplosiv vækst. Dette har blandt andet skabt en øget interesse for danskerens pendlingsmønstre og den regionale indkomstfordeling. I dette temahælste analyserer vi den langsigtede effekt af husstandsindkomst på pendlingsafstand.

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State: Published
Organisations: Department of Management Engineering, Systems Analysis, Transport DTU
Authors: Mulalic, I. (Intern), Van Ommeren, J. N. (Ekstern)
Number of pages: 19
Publication date: 2017
Designer's identity: Development of personal attributes and design skills over education

Designers' Professional identity (DPI) is a social- and self-perceptive construct through which designers are able to identify themselves. To understand the development of DPI, not just as a profession but also as an educational process, there is a need to consider the designer as both individual and trained professional. These interactions become also a necessary foundation for professionalism that is especially important for design activity. For this study, a psychometric survey was developed by taking in consideration both aspects of DPI, making use of a set of elements distilled from literature as conceptual parameters for Personal Attributes and Design Skills. The survey evaluated professional self-awareness of design students at bachelor and master level; also providing a first profile model of the two groups. The dynamics of the relations between the DPI elements changes and develops very slowly due to the process of identity consolidation over the educational period. Further, DPI consolidates through a lifelong learning process. These results provide an initial insight into the development of DPI and the challenges of measuring this subjective aspect over education.

Design of grid tariffs in electricity systems with variable renewable energy and power to heat

Large shares of variable renewable energy (VRE), requires flexibility solutions are developed. Considerable flexibility potentials exist from large consumers, e.g. power-to-heat (P2H) in district heating (DH). However, the existing grid tariffs obliterate the price signals from the wholesale electricity market and diminish the business cases for these technologies by increasing the costs of their electricity consumption. With the present tariff structure, only a very small part of the flexibility potential is deployed or operated flexible. In this paper we compare two different grid tariff designs that facilitate more flexible energy demand of DH operators. This is illustrated by a case study of Denmark that clearly demonstrates that the introduction of innovative tariffs will improve the business case for flexible P2H technologies and increase the value of VRE. In this way larger flexibility potentials can be induced and larger shares of VRE become integrated in the energy systems.
Design of grid tariffs in electricity systems with variable renewable energy and power to heat

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Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Determining design requirements for active aging: Personas, experience maps, and stakeholders

In this European multicenter project REACH-Responsive Engagement of the older adults promoting Activity and Customized Health care (REACH), a sensing-monitoring-intervention system is being developed that can be placed in an unobtrusive manner in various care settings and living environments of the older adults. In order to develop such a complex user-centered system, experts from several professions needed to collaborate in a joint development team. To have a successful development progress, it is essential to perform requirement specification and analysis in the beginning of the project. A description of the targeted end-user including the user environment and an analysis of the entities associated with the user and thus associated with the system is needed. Different methods are used to describe and analyze these important components of the REACH system, such as describing use cases, creating personas, developing experience maps, and defining and analyzing stakeholders. The methods used are described and the findings are reported.

Determined design requirements for active aging: Personas, experience maps, and stakeholders

General information
State: Published
Organisations: Department of Civil Engineering, Section for Structural Engineering, Department of Management Engineering, Quantitative Sustainability Assessment
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Determined design requirements for active aging: Personas, experience maps, and stakeholders

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Schön Klinik Bad Aibling
Authors: Schäpers, B. (Ekstern), Yasuoka, M. (Intern), Becker, D. (Ekstern), Heller, S. (Ekstern), Kaiser, M. (Ekstern), Koenig, E. (Ekstern), Müller, F. (Ekstern)
Pages: 139-150
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Main Research Area: Technical/natural sciences

Publication information
Journal: Gerontechnology
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ISSN (Print): 1569-1101
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BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
Developing a model for measuring fear of pain in Norwegian samples: The Fear of Pain Questionnaire Norway

Fear of pain is highly correlated with pain report and physiological measures of arousal when pain is inflicted. The Fear of Pain Questionnaire III (FPQ-III) and The Fear of Pain Questionnaire Short Form (FPQ-SF) are self-report inventories developed for assessment of fear of pain (FOP). A previous study assessed the fit of the FPQ-III and the FPQ-SF in a Norwegian non-clinical sample and proved poor fit of both models. This inspired the idea of testing the possibility of a Norwegian FOP-model. A Norwegian FOP-model was examined by Exploratory Factor Analysis (EFA) in a sample of 1112 healthy volunteers. Then, the model fit of the FPQ-III, FPQ-SF and the Norwegian FOP-model (FPQ-NOR) were compared by Confirmatory Factor Analysis (CFA). Sex neutrality was explored by examining model fit, validity and reliability of the 3 models amongst male and female subgroups. The EFA suggested either a 4-, a 5- or a 6-factor Norwegian FOP model. The eigenvalue criterion supported the suggested 6-factor model, which also explained most of the variance and was most interpretable. A CFA confirmed that the 6-factor model was better than the two 4- and 5-factor models. Furthermore, the CFA used to test the fit of the FPQ-NOR, the FPQ-III and the FPQ-SF showed that the FPQ-NOR had the best fit of the 3 models, both in the whole sample and in sex sub-groups. A 6-factor model for explaining and measuring FOP in Norwegian samples was identified and termed the FPQ-NOR. This new model constituted six factors and 27 items, conceptualized as Minor, Severe, Injection, Fracture, Dental, and Cut Pain. The FPQ-NOR had the best fit overall and in male- and female subgroups, probably due to cross-cultural differences in FOP. This study highlights the importance on exploratory analysis of FOP-instruments when applied to different countries or cultures. As the FPQ-III is widely used in both research and clinical settings, it is important to ensure that the models construct validity is high. Country specific validation of FOP in both clinical and non-clinical samples is recommended.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU, UiT The Arctic University of Norway, Norwegian University of Science and Technology
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Main Research Area: Technical/natural sciences

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Volume: 17
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Scopus rating (2015): CiteScore 0.64 SNIP 0.449 SJR 0.369
Scopus rating (2014): CiteScore 0.67 SNIP 0.35 SJR 0.449
Scopus rating (2013): CiteScore 0.73 SNIP 0.515 SJR 0.337
Developing communities of practice in health care

Purpose
Standard operating procedures (SOPs) are a part of healthcare operations but relying on explicit knowledge is not necessarily sufficient to continuously adapt and improve processes. The theory of communities of practice (CoP) proposes an approach to knowledge sharing that could supplement the use of SOPs. A CoP is a social community formed around a practice (e.g. ICU nursing) which induce a propensity to share experiences and thereby constitute knowledge sharing (Lave & Wenger 1991; Brown & Duguid 1991).

CoP was conceived as a descriptive construct but has gained popularity and is found to improve practice performance, but knowledge about developing and measuring CoP is lacking (Ison et al. 2014).

We propose a method to develop a CoP and the method is tested in a blood analysis unit at 'Nordsjællands Hospital' in Denmark.

Design/methodology/approach
The interventions were identified from current CoP research. Interventions were initiated just after baseline measurement. The following interventions took place: The practice was operationalized narrowly as employees performing a specific operational task. The practice was chosen due to a high frequency and recurring problems. A voluntary CoP coordinator was identified. She then invited her colleagues to participate in the CoP and arranged CoP meetings.

The 'Event Effect Method' was used to control for effect modifiers by identifying events both part and not part of the intervention and estimating their effect on CoP.

Originality/value
The development method improved knowledge sharing and the SOP. The method confirmed some earlier findings regarding CoP development and raises new questions regarding participant engagement, researcher role and start-up workshop.

Practical implications
The results indicate that knowledge sharing within operations can be improved by considering tacit and explicit knowledge sharing as supplementary.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Jørgensen, R. (Intern), Edwards, K. (Intern)
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Source-ID: 133954154
Publication: Research - peer-review › Paper – Annual report year: 2017

Development of a generalized integral jet model
Integral type models to describe stationary plumes and jets in cross-flows (wind) have been developed since about 1970. These models are widely used for risk analysis, to describe the consequences of many different scenarios. Alternatively, CFD codes are being applied, but computational requirements still limit the number of scenarios that can be dealt with using CFD only. The integral models, however, are not suited to handle transient releases, such as releases from pressurized equipment, where the initially high release rate decreases rapidly with time. Further, on gas ignition, a second model is needed to describe the rapid combustion of the flammable part of the plume (flash fire) and a third model has to be applied for the remaining jet fire. The objective of this paper is to describe the first steps of the development of an integral-type model describing the transient development and decay of a jet of flammable gas after a release from a pressure container. The intention is to transfer the stationary models to a fully transient model, capable to predict the maximum extension of short-duration, high pressure jets. The model development is supported by conducting a set of
transient ignited and unignited spontaneous releases at initial pressures between 25bar and 400bar. These data forms the basis for the presented model development approach.

**Development of Comparative Toxicity Potentials of TiO₂ Nanoparticles for Use in Life Cycle Assessment**

Studies have shown that releases of nanoparticles may take place through the life cycle of products embedding nanomaterials, thus resulting in potential impacts on ecosystems and human health. While several life cycle assessment (LCA) studies have assessed such products, only a few of them have quantitatively addressed the toxic impacts caused by released nanoparticles, thus leading to potential biases in their conclusions. Here, we address this gap and aim to provide a framework for calculating characterization factors or comparative toxicity potentials (CTP) for nanoparticles and derive CTP values for TiO₂ nanoparticles (TiO₂-NP) for use in LCA. We adapted the USEtox 2.0 consensus model to integrate the SimpleBox4Nano fate model, and we populated the resulting model with TiO₂-NP specific data. We thus calculated CTP values for TiO₂ nanoparticles for air, water, and soil emission compartments for freshwater ecotoxicity and human toxicity, both cancer effects and noncancer effects. Our results appeared plausible after benchmarking with CTPs for other nanoparticles and substances present in the USEtox database, while large differences were observed with CTP values for TiO₂ nanoparticles published in earlier studies. Assumptions, which were performed in those previous studies because of lack of data and knowledge at the time they were made, primarily explain such discrepancies. For future assessment of potential toxic impacts of TiO₂ nanoparticles in LCA studies, we therefore recommend the use of our calculated CTP.

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Web of Science (2018): Indexed yes  
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BFI (2016): BFI-level 2  
Scopus rating (2016): CiteScore 6.26 SJR 2.538 SNIP 1.889  
Web of Science (2016): Indexed yes  
BFI (2015): BFI-level 2
Different Styles for Different Needs – The Effect of Cognitive Styles on Idea Generation

Researchers are engaged in finding the precursors for innovation. Drawing on Kirton's Adaption-Innovation (KAI) Inventory, we explicitly test Kirton's central premise that cognitive styles differentiate between preferences for producing
ideas in a certain way. We argue that the generation of either a magnitude or original ideas is governed by different underlying cognitive styles. In a study with 191 individuals, we find that the cognitive style originality associates with ideational fluency whereas the rule governance style associates with the generation of original ideas. By providing a cognitive explanation for how ideas are generated, we deepen the understanding of the idea generation process. This is particularly important for the future use of the KAI and for organizations that strive to be innovative.

**General information**
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Lomberg, C. (Intern), Kollmann, T. (Ekstern), Stockmann, C. (Ekstern)
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BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.552 SNIP 1.071 CiteScore 1.38
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Scopus rating (2013): SJR 0.32 SNIP 0.58 CiteScore 0.92
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 2
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 2
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Original language: English
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**Discrete choice models for commuting interactions**
An emerging quantitative spatial economics literature models commuting interactions by a gravity equation that is mathematically equivalent to a multinomial logit model. This model is widely viewed as restrictive because of the independence of irrelevant alternatives (IIA) property that links substitution behavior in response to changes in the attractiveness of choice alternatives to choice probabilities in a mechanistic way. This is relevant for counterfactual analysis. In this paper we examine the appropriateness of the commuting model from a theoretical as well as an empirical point of view. We show that conventional specification tests of the multinomial logit model are of limited use when alternative specific constants are used, as is common in the recent literature, and offer no information with respect to the validity of IIA. In particular, we show that maximum likelihood estimation of relevant nested logit model is impossible because the crucial parameters are not identified. We discuss cross-nested and mixed logit as alternatives. We argue that a comparison between predicted and actual changes in commuting flows in response to a change in the attractiveness of choice alternatives provides a more informative test for the validity of the multinomial logit model for commuting interaction.
Discussions About Lying With An Ethical Reasoning Robot
The conversational ethical reasoning robot Immanuel is presented. Immanuel is capable of defending multiple ethical views on morally delicate situations. A study was conducted to evaluate the acceptance of Immanuel. The participants had a conversation with the robot on whether lying is permissible in a given situation. The robot first signaled uncertainty about whether lying is right or wrong in the situation, then disagreed with the participant's view, and finally asked for justification. The results indicate that participants with a higher tendency to utilitarian judgments are initially more certain about their view as compared to participants with a higher tendency to deontological judgments. These differences vanish at the end of the dialogue. Lying is defended and argued against by both utilitarian and deontologically oriented participants. The diversity of the reported arguments gives an idea of the variety of human moral judgment. Implications for the design and application of morally competent robots are discussed.

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State: Published
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https://www.designsociety.org/publication/39491/ds_87-2_proceedings_of_the_21st_international_conference_on_engineering_design_iced_17_vol_2_design_processes_design_organisation_and_management_vancouver_canada_21-25_08_2017
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DS 87-4 Proceedings of the 21st International Conference on Engineering Design (ICED 17) Vol 4: Design Methods and Tools

General information
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Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology, University of Zagreb, Ryerson University
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Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology, University of Zagreb, Ryerson University
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Main Research Area: Technical/natural sciences
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General information
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Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology, University of Zagreb, Ryerson University
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DS 87-6 Proceedings of the 21st International Conference on Engineering Design (ICED 17) Vol 6: Design Information and Knowledge

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Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology, University of Zagreb, Ryerson University
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DS 87-9 Proceedings of the 21st International Conference on Engineering Design (ICED 17) Vol 9: Design Education

General information
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Dynamic Bluetooth beacons for people with disabilities
This paper focuses on digital aids for sight impairment and motor disabilities. We propose an Internet of Things (IoT) platform for discovering nearby items, getting their status, and interacting with them by e.g. voice commands or gaze gestures. The technology is based on Bluetooth Low Energy, which is included in consumer electronics such as smartphones without requiring additional hardware. The paper presents a prototype platform illustrated by concepts of use.

General information
State: Published
Organisations: Department of Management Engineering, Alexandra Institute
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Series: 2016 Ieee 3rd World Forum on Internet of Things (wf-iot)
Main Research Area: Technical/natural sciences
Bluetooth, Handicap, Beacons, Interaction, Navigation
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Dynamic Heat Production Modeling for Life Cycle Assessment of Insulation in Danish Residential Buildings
Residential building insulation is regarded as an easy solution for environmentally friendly building design. This assumption is based on the perception that the amount of thermal energy used to create insulation in most cases is much smaller than the amount of thermal energy that is needed for space heating without insulation over the lifespan of a building. When the energy sources for insulation production are similar to the energy mix that supplies heat, this logic is valid to very high level of insulation. However, in Denmark, as well as many other countries this assumption is becoming increasingly incorrect. Given the generally long service life of buildings, the significance of future energy mixes, which are expected/intended to have a smaller environmental impact, can be great. In this paper, a reference house is used to assess the life cycle environmental impacts of mineral wool insulation in a Danish single-family detached home. This single family house, is based on averages of current Danish construction practices with building heat losses estimated using Be10. To simulate a changing district heating grid mix, heat supply fuel sources are modeled according to Danish energy mix reports of fuel mix since 1972. Both the dynamic impact potentials saved by using insulation and the impacts induced from insulations production are utilized to create an overall dynamic energy inventory for the life cycle assessment. Our study shows that the use of such a dynamic energy inventory is necessary for for increasing the validity of optimization assessment, and our study further shows that it is likely that current Danish regulation will not promote optimum levels of insulation in the near future.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Roskilde University
Authors: Sohn, J. L. (Ekstern), Kalbar, P. (Intern), Birkved, M. (Intern)
Pages: 737-743
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Conference: International Conference on Sustainable Synergies from Buildings to the Urban Scale, Thessaloniki, Greece, 17/10/2016 - 17/10/2016
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ISI indexed (2012): ISI indexed no
Dynamic queuing transmission model for dynamic network loading

This paper presents a new macroscopic multi-class dynamic network loading model called Dynamic Queuing Transmission Model (DQTM). The model utilizes ‘good’ properties of the Dynamic Queuing Model (DQM) and the Link Transmission Model (LTM) by offering a DQM consistent with the kinematic wave theory and allowing for the representation of multiple vehicle classes, queue spillbacks and shock waves. The model assumes that a link is split into a moving part plus a queuing part, and that traffic dynamics are given by a triangular fundamental diagram. A case-study is investigated and the DQTM is compared with single-class LTM, single-class DQM and multi-class DQM. Under the model assumptions, single-class models indicate that the LTM and the DQTM give similar results and that the shock wave property is properly included in the DQTM, while the multi-class models show substantially different travel times for two vehicle classes. Moreover, the results show that the travel time will be underestimated without considering the shock wave property.

General information
State: Published
Organisations: Department of Transport, Department of Management Engineering, Transport DTU, Traffic modelling and planning
Authors: Raovic, N. (Intern), Nielsen, O. A. (Intern), Prato, C. G. (Intern)
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Main Research Area: Technical/natural sciences

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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
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Scopus rating (2016): CiteScore 1.18 SJR 0.369 SNIP 0.993
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.371 SNIP 0.651 CiteScore 0.77
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.336 SNIP 1.005 CiteScore 0.91
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.379 SNIP 0.745 CiteScore 0.82
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.439 SNIP 0.664 CiteScore 1.06
ISI indexed (2012): ISI indexed no
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.479 SNIP 0.903 CiteScore 1.64
ISI indexed (2011): ISI indexed no
Dynamics of Eco-innovation in Emerging Economies: the Case of Green Food Production in Brazil

The growing awareness of the unsustainability of economic growth in the world brings up the necessity of adopting measures to make it more ecologically responsible and sustainable, i.e. more appropriate to social needs and environmental limits of the planet (SACHS, 1993; DALY, H., FARLEY, J., 2003). More recently, the rising environmental concerns are affecting economic activity so significantly that we are referring to a ‘green economy’ (ANDERSEN, 2010). In this paper, we review existing findings and try to present the scenario behind the theme contrasting Brazil with international trends, discuss data availability and formulate research questions and hypothesis. Key questions addressed in order to understand the emergence of the green food market and the industrial dynamics of green food production behind it in Brazil are: (i) Which type (size, age) of companies are forwarding the green food agenda in Brazil? Particularly what is the role of the big international companies to induce eco-innovation in green food? (ii) To what degree is the green food agenda forwarded by Brazilian versus international companies? (iii) How does the organic chain work? More specifically, to what degree do we see upstream versus downstream green movements? A hypothesis is that Brazil, as the other BRICs rapidly emerging economies, may leapfrog the green economy and more quickly develop well-functioning green food markets as compared to the slow learning curves experienced in the green food market of the developed economies. The recent big crisis in the Brazilian economy and political system may, though, halt this development. On the other hand, the economic crisis may also foster green creativity and entrepreneurship.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Laureate International Universities
Authors: Lima, L. F. (Ekstern), Andersen, M. M. (Intern)
Number of pages: 10
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Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Paper – Annual report year: 2017

Dynamisk vejvalgsmodel for Hovedstadsområdet

Trængselsniveauet i Hovedstadsområdet er stigende. Dette medfører store udsving i trafikmængder og hastigheder over døgnet og myldretiderne, men dette repræsenteres ikke i traditionelle statiske modeller. Dynamiske modeller opererer på et langt større detaljeningsniveau og modellerer sådanne udsving på realistisk vis. Der er netop blevet udviklet en dynamisk vejvalgsmodel for Hovedstadsområdet, og artiklen præsenterer de indledende resultater.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Rapidis Aps
Authors: Rasmussen, T. K. (Intern), Paulsen, M. (Intern), Brun, B. (Ekstern)
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Main Research Area: Technical/natural sciences
Early stage Life Cycle Assessment of different Green Biorefinery configurations: assessing the utilization of the press-pulp

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Corona, A. (Intern), Birkved, M. (Intern)
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SustainAbstracts2017c.compressed_148.pdf

EcoDesign 2.0 - Quantitative EcoDesign within Drives and Automation Technologies
The PhD project has its research background mainly in the fields of product development & design, manufacturing systems and quantitative sustainability assessment, incl. environmental Life Cycle Assessment (LCA). Related organizational and management research is also drawn upon as well as systems engineering approaches. Research focus lies in areas where these fields overlap and complement each other in the development process of given applications, in particular the development and implementation of Drives and Automation Technologies. The evaluation of the research background, based on research projects [Thomas 2012; Meincke 2012; Röttjes 2012; Gama & Herrmann, 2013], scientific publications, e.g. [McAlone & Bey 2009; Wimmer et al., 2014] and practical experience (e.g. development of international standards, implementing ecodesign at Siemens) lead to the formulation of the corresponding challenges and a problem statement, which is followed up by the research objective of the development of an ”Ecodesign 2.0” (ECD2.0) approach and the definition of key requirements for the approach in terms of underlying methods and supportive means. In the execution of the project, the research background and currently implemented state-of-the-art of ecodesign of drives and automation technologies in discreet and process industries was evaluated, putting it in context to the processes and portfolio of the Siemens AG, Process Industries & Drives Division (PD), as well as current sustainability challenges. This led to the formulation of the following research challenges:

- Lack of methodological support to create insight regarding system-context-depending ecoperformance; i.e. lack of generic understanding of environmental performance of the stand-alone product vs. the environmental performance of the entire solution/application which the product is part of;

- During design, lack of guidance towards a structured balancing or combination of early-stage qualitative approaches (e.g. for idea/concept evaluation) and later-stage quantitative approaches (e.g. for product documentation);
- Lack of systematic approaches to design the above in a comprehensive and yet feasible way, applicable in industrial settings – and with regard to special conditions opposed by long application life times and high customer investments that may be involved.

This then led to the working hypothesis, that instead of dealing with single products, eco-design of industrial automation and drive technologies has to address the key issue of the solution’s usage stage in terms of system design corresponding to the application context, where several products work in conjunction with each other. Further, in response to the above challenges, the overall objective of the PhD project was set to create supportive means (tools, methods, models, etc.) which stimulate design of non-sub-optimised solutions through focussing on improving automation and drive technologies in an application context. Based upon this, the research was defined by evaluating and choosing appropriate underlying methods and reference applications for conducting the corresponding case studies. Appropriate methods were found by discussions and literature reviews, for conducting the case studies to elaborate on the hypothesis by applying LCA and Life Cycle Costing (LCC) and displaying the results in an eco-efficiency tool, the Siemens EcoCare-Matrix (ECM). The hypothesis was then proven by investigating implemented full-scale reference applications considering environmental and economic facts evaluated over the whole product/application life cycle, which can be found in chapters 6 (reference applications), 7 and 8 (case study results). Further the ECD2.0 approach was outlined, based on the eco-efficiency tool ECM, supported by LCA and LCC as underlying methods, utilizing the newly developed ‘Extended Product Approach’ (EPA) for describing ‘functional unit’, as interfacedefinition between the application and the supporting system. Finally, the results are discussed and concluded upon, by picking up the topic of necessary enablers, such as a simplified LCA approach and robust characterisation methods, as well as application examples in sales and portfolio management context.

General information
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Authors: Auer, J. (Intern), Bey, N. (Intern), Hauschild, M. Z. (Intern), Wegener, D. (Intern)
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Ecological and human health risks associated with abandoned gold mine tailings contaminated soil
Gold mining is a major source of metal and metalloid emissions into the environment. Studies were carried out in Krugersdorp, South Africa, to evaluate the ecological and human health risks associated with exposure to metals and metalloids in mine tailings contaminated soils. Concentrations of arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), nickel (Ni), and zinc (Zn) in soil samples from the area varied with the highest contamination factors (expressed as ratio of metal or metalloid concentration in the tailings contaminated soil to that of the control site) observed for As (3.5x10^2), Co (2.8x10^2) and Ni (1.1x10^2). Potential ecological risk index values for metals and metalloids determined from soil metal and metalloid concentrations and their respective risk factors were correspondingly highest for As (3.5x10^3) and Co (1.4x10^3), whereas Mn (0.6) presented the lowest ecological risk. Human health risk was assessed using Hazard Quotient (HQ), Chronic Hazard Index (CHI) and carcinogenic risk levels, where values of HQ > 1, CHI > 1 and carcinogenic risk values > 1 x 10^-4 represent elevated risks. Values for HQ indicated high exposure-related risk for As (53.7), Cr (14.8), Ni (2.2), Zn (2.64) and Mn (1.67). Children were more at risk from heavy metal and metalloid exposure than adults. Cancer-related risks associated with metal and metalloid exposure among children were also higher than in adults with cancer risk values of 3 x 10^-2 and 4 x 10^-2 for As and Ni respectively among children, and 5 x 10^-3 and 4 x 10^-3 for As and Ni respectively among adults. There is significant potential ecological and human health risk associated with metal and metalloid exposure from contaminated soils around gold mine tailings dumps. This could be a potential contributing factor to a setback in the health of residents in informal settlements dominating this mining area as the immune systems of some of these residents are already compromised by high HIV prevalence.

General information
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Economic and Environmental Impact Trade-Offs Related to In-Water Hull Cleanings of Merchant Vessels

Merchant vessels are equipped with antifouling systems to prevent accumulation of marine organisms on the hull—a phenomenon known as fouling. In many cases, however, fouling accumulates and in-water hull cleaning is required. Hull cleanings are part of a hull management scheme, and although they are an established practice, their associated environmental and economic trade-offs and conflicts have remained largely unexplored. The purpose of this article is to quantitatively assess both economic and environmental impacts of hull management schemes on the operation of tanker vessels. After identifying induced and avoided costs and environmental impacts from the hull management system, we used both temporally and spatially distributed models to capture the degradation of the antifouling system as well as the global sailing profile of the vessels. Last, we analyzed how each of the modeled impacts varied with the frequency of hull cleanings within the hull management scheme. Our analysis revealed a convex relationship between the frequency of hull cleanings and fuel savings. The higher the frequency of hull cleanings, the less fuel savings can be achieved per cleaning. In terms of costs, from some point on the costs of the service are likely to offset the savings—especially if fuel prices are low. In regards to climate change, avoided emissions due to fuel savings are likely to outweigh the limited impacts from the service itself. Last, while ecosystem impacts from marine, terrestrial, and freshwater eco-toxicity are likely to increase from hull cleanings, they are subject to high uncertainties.

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Organisations: Department of Mechanical Engineering, Engineering Design and Product Development, Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Pagoropoulos, A. (Intern), Kjær, L. L. (Intern), Dong, Y. (Intern), Birkved, M. (Intern), McAloone, T. C. (Intern)
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Web of Science (2013): Indexed yes
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Scopus rating (2011): SJR 1.031 SNIP 1.228 CiteScore 2.13
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BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.891 SNIP 1.329
Web of Science (2010): Indexed yes
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Economies of scale in biogas production and the significance of flexible regulation

Biogas production is characterised by economies of scale in capital and operational costs of the plant and diseconomies of scale from transport of input materials. We analyse biogas in a Danish setting where most biogas is based on manure, we use a case study with actual distances, and find that the benefits of scale in capital and operational costs dominate the diseconomies of increasing transport distances to collect manure. To boost the yield it is common to use co-substrates in the biogas production. We investigate how costs and income changes, when sugar beet is added in this case study, and demonstrate that transport cost can be critical in relation to co-substrates. Further we compare the new Danish support for upgraded biogas with the traditional support for biogas being used in Combined Heat and Power production in relation to scale economies. We argue that economies of scale is facilitated by the new regulation providing similar support to upgraded biogas fed into the natural gas grid, however in order to keep transport costs low, we suggest that the biogas plants should be allowed to use and combine as many co-substrates as possible, respecting the sustainability criteria regarding energy crops in Danish legislation.

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Projects abound in society, and turned from an ‘accidental profession’ to an attractive career path (Pinto & Kharbanda, 1995). In this line, engineers and engineering students are increasingly recognizing the criticality of project management to their own profession. The consequence is that we need to educate an increasing number of students in project management. At the Technical University of Denmark (DTU) - one of the leading engineering universities in Scandinavia - the number of students taking our courses has increased organically from 150 to over 300 in the last 5 years - a number that is believed to grow even further in the coming years. We thus face the challenge of educating an increasing number of students. One alternative is a focus on traditional learning methods, multiple-choice exams, and a deterministic learning path. However, such tactic is unlikely to develop the reflective practitioner that are required in practice, as seminally argued by Schön (Schön, 1983, 1987), and also applied and argued to project management specifically (Crawford, Morris, Thomas, & Winter, 2006). This hands-on section will describe and analyze our experience – successes and failures – our program to change education of project engineers at DTU with the vision to educate large number of students and enable them to reflect and experience how to DO projects, as oppose to teaching normative tools and techniques. This hands-on section will facilitate discussion about practices to encourage the development of reflective practitioners in large classrooms. It will do so by creating a context for you to experience being a student in a large classroom, and hence being detached from the ‘actual author of the work’. Akin blended learning strategies, you will watch an introductory video, and you will do individual and group exercises, discussing your experiences and this experience of being detached from the ‘teachers’. The discussion will be facilitated by another person (instead of the authors), which will act like a ‘teaching assistant’, as students experience in large classrooms. We will instruct this other person, but will not be there in the discussions itself. We then join by the end of the discussion, when we will close the session sharing our practices and experiences in dealing with large classrooms. Our program included thirteen mini-projects with implementation of peer grade, blended learning, modularization of education, ISO21500 certification, project games, development of flexible teaching material, embeddedness of project management throughout student practices, connection to societal and global challenges, industry advisory board, and the development of a Project Laboratory. Our work makes two key contributions. First, it points to some pragmatic struggles directly from the classroom, when attempting to reach out to large number of students, while not compromising on a practice approach to projects, and still carrying out an active research career. Second, it positions the relevance of a holistic and systemic view on university education of project managers to engineers.

Effects of carbon fibres on the life cycle assessment of additively manufactured injection moulding inserts for rapid prototyping

A life cycle assessment was conducted to evaluate the global warming potential and human toxicity of injection moulding processes applying newly developed tool inserts produced with vat polymerisation. The inserts were subject to increasing content of carbon fibres to improve their mechanical properties and lifetime. The additively manufactured inserts are compared to the standard materials steel, aluminium and brass. The investigated part of the production and prototyping phase considers the insert itself, the moulded part, and resulting waste material of the injection moulding process.
Effekten af autonome og selvkørende biler på kortere og lang sigt

Der er i Danmark og USA enighed om, at helt autonome køretøjer vil være på markedet fra 2030-35, hvorved de vil de være slået igennem i stort set hele bilparken om ca. 50 år. Men inden for 10 år vil en del nye biler være selvkørende på niveau 4, og dermed vil de teknisk set kunne det samme som autonome køretøjer. Muligvis vil der endda være godkendte autonome minibusser på vejene inden for 10 år. Det bør derfor allerede inden for 5 år overvejes, hvordan udviklingen i bilparken kan udnyttes til fordel for samfundet, og hvilke krav det politisk vil være relevant at stille til godkendelse af autonome køretøjer. Allerede i dag ved vi stort set, hvad autonome og selvkørende biler basalt set må forventes at kunne. Det interessante er derfor, hvilken effekt disse egenskaber vil have på trafikken, trængslen, vores byer, behov for infrastruktur osv.
Electric vehicles and India's low carbon passenger transport: A long-term co-benefits assessment

Electric vehicles have attracted the attention of India's policy makers as clean technology alternatives due to their multiple advantages like higher efficiency and lower air pollution in short to medium term and reduced CO2 emissions as electricity gets decarbonized in the long-run under low carbon scenarios. This paper uses an energy system model ANSWER-MARKAL to analyse the role of electric vehicles (EV) in India. The modelling assessment spans the period 2010 to 2050 and analyses future EV demand in India under three scenarios: i) a 'Reference' scenario which includes the continuation of existing EV policies as outlined in India's Intended Nationally Determined Contribution (INDC); ii) a 'EV policy' scenario which, in line with India's INDCs, follows targeted supply-side push policies for EVs, but without the budget constraints; and iii) a 'low carbon' scenario which uses an exogenous price for CO2 in line with the global target of 2 °C temperature stabilization. The scenarios analysis delineates penetration of EVs and their co-benefits as well as co-costs. The co-benefits relate to local air quality, national energy security and CO2 emissions in India whereas the co-costs (risks) are related to sourcing of raw materials for batteries and battery reprocessing and disposal.

The findings show that: i) in the reference scenario, the EVs 2-wheelers will achieve a significant share by 2050. Electric 4-wheelers though would have a small share even in 2050; ii) EV push policies though lead to significant diffusion of electric 2-wheelers in India by 2030. These policies enhance diffusion of electric 4-wheelers only if financial incentives are sustained in the long-term, iii) the application of global carbon price on the Indian economy in the 2° C stabilization scenario increases competitiveness of EVs and results in near total share of electric 2-wheelers by 2030 and a sizable share of electric 4-wheelers by 2050. The high and rising carbon price in low carbon scenario cause deep decarbonisation of electricity and enables EVs to deliver deep cut in CO2 emissions. The results show asymmetry in the impacts of national and global policies on co-benefits from EV. The EV supply-push policies deliver moderate benefits vis-à-vis air pollution and energy security indicators but make insignificant contribution CO2 emissions reduction. On the other hand, the global carbon price in the global 2° C stabilization scenario delivers sizable co-benefits vis-à-vis all three indicators. This asymmetry reveal important policy insights: i) the policy sequencing is vital to gain co-benefits, ii) EV technology push policies are good for creating early domestic market for a clean vehicle technology but they may not deliver sizable co-benefits vis-à-vis CO2 emissions which are global externalities, and iii) implementing strong climate policies early would lead to EVs delivering high co-benefits, in case of India, vis-à-vis all three indicators.
Empirical analyses of a choice model that captures ordering among attribute values

In most choice models, the evaluation of attributes depends on differences of attribute values. Some research, mainly in marketing and psychology, suggests that the differences do not give the full picture of how decision makers evaluate choice alternatives, e.g. some decision makers may penalise an alternative additionally because it has the highest price. In this paper, we specify a discrete choice model that takes into account the ordering of attribute values across alternatives. This model is used to investigate the effect of attribute value ordering in three case studies related to alternative-fuel vehicles, mode choice, and route choice. In our application to choices among alternative-fuel vehicles, we see that especially the price coefficient is sensitive to changes in ordering. The ordering effect is also found in the applications to mode and route choice data where both travel time and cost sensitivities are affected by the ordering. Overall, the ordering effects have implications for both parameter estimates and the evaluation of willingness-to-pay measures.

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BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.55 SNIP 0.657 CiteScore 0.98
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.659 SNIP 0.684 CiteScore 1.13
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.622 SNIP 1.346 CiteScore 1.35
ISI indexed (2013): ISI indexed no
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.586 SNIP 0.933
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.49 SNIP 0.809
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.512 SNIP 0.496
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.196 SNIP 0.484
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Enabling Bus Transit Service Quality Co-Monitoring Through Smartphone-Based Platform

The growing ubiquity of smartphones offers public transit agencies an opportunity to transform ways to measure, monitor, and manage service performance. The potential of a new tool is demonstrated for engaging customers in measuring satisfaction and co-monitoring [Editor's note: This is the authors' word, meaning "agencies using public feedback to supplement official monitoring and regulation."] bus service quality. The pilot project adapted a smartphone-based travel survey system, Future Mobility Sensing, to collect real-time customer feedback and objective operational measurements on specific bus trips. The system used a combination of GPS, Wi-Fi, Bluetooth, and accelerometer data to track transit trips while soliciting users' feedback on trip experience. Though not necessarily intended to replace traditional monitoring channels and processes, these data can complement official performance monitoring through a more real-time, customer-centric perspective. The pilot project operated publicly for 3 months on the Silver Line bus rapid transit in Boston, Massachusetts. Seventy-six participants completed the entrance survey; half of them actively participated and completed more than 500 questionnaires while on board either at the end of a trip, at the end of a day, or both. Participation was biased toward frequent Silver Line users, the majority of whom were white and of higher income. Indicative models of user-reported satisfaction reveal some interesting relationships, but the models can be improved by fusing the app-collected data with actual performance characteristics. Broader and more sustained user engagement remains a critical future challenge.

General information
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Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Massachusetts Institute of Technology, Singapore–Massachusetts Institute of Technology (MIT)
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.75 SJR 0.494 SNIP 0.722
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.547 SNIP 0.769 CiteScore 0.6
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.529 SNIP 0.8 CiteScore 0.58
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.608 SNIP 0.877 CiteScore 0.76
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.522 SNIP 0.907 CiteScore 0.6
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.428 SNIP 0.999 CiteScore 0.72
ISI indexed (2011): ISI indexed yes
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Energy demand, substitution and environmental taxation: An econometric analysis of eight subsectors of the Danish economy

This research contains an econometric analysis of energy demand in trade and industry which allows for substitution between electricity and other energy carriers when relative prices change. The presence of substitution suggests that taxation can be a means of changing the energy input mix in a more environmental-friendly direction. For eight subsectors of the Danish economy, time series (1966–2011) are modeled by means of partial Cointegrated VARs. Long-run demand relations are identified for all subsectors and robust price elasticities are supported in five cases. The results are used in a small impulse–response experiment which suggests a potential for taxation to induce substitution of electricity for fossil-based energy.

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BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.865 SNIP 1.941 CiteScore 3.74
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.875 SNIP 2.169 CiteScore 3.63
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.974 SNIP 2.102 CiteScore 3.45
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.142 SNIP 2.023 CiteScore 3.17
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.43 SNIP 2.115 CiteScore 3.29
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.053 SNIP 1.989
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.425 SNIP 1.742
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.579 SNIP 2.324
Scopus rating (2007): SJR 2.118 SNIP 2.237
Scopus rating (2006): SJR 1.102 SNIP 1.647
Scopus rating (2005): SJR 0.629 SNIP 1.104
Scopus rating (2004): SJR 0.822 SNIP 1.244
Scopus rating (2003): SJR 0.764 SNIP 0.916
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.564 SNIP 1.088
Scopus rating (2001): SJR 0.926 SNIP 1.566
Scopus rating (2000): SJR 1.013 SNIP 1.281
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Energy Economics and Regulation

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Energy for Sustainable Development in Africa: Successes, Challenges and the way forward

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Energy supply modelling of a low-CO₂ emitting energy system: Case study of a Danish municipality

Municipal activities play an important role in national and global CO₂-emission reduction efforts, with Nordic countries at the forefront thanks to their energy planning tradition and high penetration of renewable energy sources. In this work, we present a case study of the Danish municipality of Sønderborg, whose aim is to reach zero net CO₂ emissions by 2029. Sønderborg has an official strategic plan towards 2029, which we compared with four alternative scenarios to investigate how the municipality could approach its target in the most energy-efficient and cost-effective way while simultaneously keeping biomass and waste consumption close to the limits of the locally available residual resources. We modelled all sectors of the energy system on the municipal scale, applying a broad range of energy conversion technologies, including advanced biomass conversion technologies and reversible electrolysis. We constructed five scenarios, each representing a different energy mix for Sønderborg’s energy system in 2029. We modelled these scenarios using the mixed-integer linear optimization tool Sifre. We compared the results for the five scenarios using four indicators: annual total system cost, total energy system efficiency, annual net system CO₂ emissions and total annual biomass consumption. The results show that scenarios with a high degree of electrification perform better on the selected indicators than scenarios with a high degree of biomass utilization. Moreover, the incorporation of advanced conversion technologies such as electrolysis, fuel cells and methanol production further reduces both the total system cost and net CO₂ of the highly electrified energy system. Our sensitivity analysis demonstrates that scenarios with a low biomass consumption and a high degree of electrification are less dependent on changes in energy prices. We conclude that in order to achieve their CO₂ emission goals in the most energy-efficient, cost-effective and sustainable way, municipalities similar to Sønderborg should compare a wide range of energy system configurations, for example, scenarios with a high degree of electrification and a limited biomass use.

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Organisations: Department of Energy Conversion and Storage, Department of Management Engineering, Systems Analysis, Energinet.dk
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Engineering Value-Effective Healthcare Solutions: A Systems Design Perspective

Our modern healthcare systems commonly face an important dilemma. While they depend on innovation to provide continuously greater healthcare value, they also struggle financially with the burden of adopting a continuous flow of new products and services. Although several disruptive healthcare models, i.e. decentralised, personalised, pervasive, connected, and stratified, promise to relieve some of this tension, they do not per se guarantee optimal value generation. We argue that systems thinking and engineering design can remedy this limitation. We support this claim by making the case of Design for Evolvability and by elaborating on two examples: MRI systems and Point-of-Care in-vitro diagnostics solutions. We specifically argue that Design for Evolvability can realign the agendas of various healthcare stakeholders, serving both individual and national interests. We finally acknowledge the limitations of current engineering design practices and call for new theoretical and empirical research initiatives taking a systems perspective on healthcare product and service design.

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Enhancing Energy Efficiency in China: Assessment of Sectoral Potentials

General information
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Organisations: Department of Management Engineering, UNEP DTU Partnership, National Development and Reform Commission, Tsinghua University
Authors: Tian, Z. (Ekstern), Zhang, X. (Ekstern), Zhu, X. (ed.) (Intern)
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Enhancing Energy Efficiency in India: Assessment of Sectoral Potentials

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Enhancing Energy Efficiency in India: Assessment of Sectoral Potentials

During the last decade, Social Media (SM) have emerged as a prominent trend in social communication, with online platforms such as Facebook and Twitter to conquer the internet space with millions of visitors per day. SM usage generates an astonishing amount of information, which could be used for scarcely experienced situations, such as mass convergence and emergency events. This study presents a preliminary exploratory analysis on examining the capacity of Social Media to extract information on individuals’ choices during evacuation. We collect tweets from the evacuation in Oroville, California USA due to danger of flood and the evacuation. The data is used for the creation of a user sample which allows the collection of historical data. The historical data is compared with the data collected during and after the evacuation. The goal of this comparison is the extraction of potential information related to the evacuation.

Enterprise Architecture Management: Toward a Taxonomy of Applications

Despite the growing interest in enterprise architecture management, researchers and practitioners lack a shared understanding of its applications in organizations. Building on findings from a literature review and eight case studies, we develop a taxonomy that categorizes applications of enterprise architecture management based on three classes of enterprise architecture scope. Organizations may adopt enterprise architecture management to help form, plan, and implement IT strategies; help plan and implement business strategies; or to further complement the business strategy-formation process. The findings challenge the traditional IT-centric view of enterprise architecture management application and suggest enterprise architecture management as an approach that could support the consistent design and evolution of an organization as a whole.

General information
State: Published
Organizations: Department of Management Engineering, Transport DTU, Transport Modelling, Technical University of Munich
Authors: Chaniotakis, E. (Ekstern), Antoniou, C. (Ekstern), Pereira, F. C. (Intern)
Pages: 699-703
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General information
State: Published
Organizations: Department of Management Engineering, IT University of Copenhagen, Aalborg University
Authors: Rahimi, F. (Intern), Gøtze, J. (Ekstern), Møller, C. (Ekstern)
Pages: 120-166
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Publication information
Environmental Impact of Long Distance Travel

This paper presents an analysis of the CO2 emission resulting from long distance travel by Danes. The emissions are analysed as the Danes' footprint the whole way from Denmark to the final destination. International travel represents 31% of the Danes' CO2 emission from passenger travel and the climate burden from long overseas distances is especially high even though only few travel overseas. The travel activity is furthermore increasing much more for long distances than for European destinations. Domestic travel activity with overnight stay is nearly stagnating. The study furthermore shows that the Danish development is not especially outstanding compared to other countries.

General information

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Organisations: Department of Transport
Authors: Christensen, L. (Intern)
Number of pages: 10
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Main Research Area: Technical/natural sciences
Electronic versions: Fra_Trafikdage_505_LindaChristensen.pdf
Environmental impacts of barley cultivation under current and future climatic conditions

The purpose of this work is to compare the environmental impacts of spring barley cultivation in Denmark under current (year 2010) and future (year 2050) climatic conditions. Therefore, a Life Cycle Assessment was carried out for the production of 1 kg of spring barley in Denmark, at farm gate. Both under 2010 and 2050 climatic conditions, four subscenarios were modelled, based on a combination of two soil types and two climates. Included in the assessment were seed production, soil preparation, fertilization, pesticide application, and harvest. When processes in the life cycle resulted in co-products, the resulting environmental impacts were allocated between the main product and their respective by-products using economic allocation. Impact assessment was done using the ReCiPe (H) methodology, except for toxicity impacts, which were assessed using USEtox. The results show that the impacts for all impact categories, except human and freshwater eco-toxicity, are higher when the barley is produced under climatic circumstances representative for 2050. Comparison of the 2010 and 2050 climatic scenarios indicates that a predicted decrease in barley yields under the 2050 climatic conditions is the main driver for the increased impacts. This finding was confirmed by the sensitivity analysis. Because this study focused solely on the impacts of climate change, technological improvements and political measures to reduce impacts in the 2050 scenario are not taken into account. Options to mitigate the environmental impacts are discussed.
Environmental impacts of electricity self-consumption from organic photovoltaic battery systems at industrial facilities in Denmark

Organic photovoltaics (OPV) show promise of greatly improving the environmental and economic performance of PV compared to conventional silicon. Life cycle assessment studies have assessed the environmental impacts of OPV, but not under a self-consumption scheme for industrial facilities. We investigate the life cycle environmental impacts of electricity self-consumption from an OPV system coupled with a sodium/nickel chloride battery at an iron/metal industry in Denmark. Results show that an OPV system without storage could decrease the carbon footprint of the industry; installation of the battery increases climate change and human toxicity impacts. We discuss sensitive modelling parameters and provide recommendations.

General information
State: Published
Organisations: Department of Energy Conversion and Storage, Organic Energy Materials, Quantitative Sustainability Assessment, Transport DTU, Department of Management Engineering
Authors: Chatzisideris, M. D. (Intern), Laurent, A. (Intern), Hauschild, M. Z. (Intern), Krebs, F. C. (Intern)
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Scopus rating (2016): CiteScore 3.93 SJR 1.672 SNIP 3.072
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BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.839 SNIP 3.185 CiteScore 3.83
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.73 SNIP 3.99 CiteScore 4.39
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.455 SNIP 3.875 CiteScore 3.87
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
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Scopus rating (2012): SJR 2.175 SNIP 4.2 CiteScore 3.04
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.153 SNIP 3.507 CiteScore 2.81
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.172 SNIP 3.45
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.625 SNIP 2.205
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.069 SNIP 1.615
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.145 SNIP 1.482
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.867 SNIP 1.962
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.936 SNIP 1.843
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.575 SNIP 2.264
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.155 SNIP 1.703
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.82 SNIP 2.063
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.576 SNIP 2.107
Web of Science (2001): Indexed yes
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Environmental impacts of electric vehicle deployment in Copenhagen for 2016-2030

General information
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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Systems Analysis
Authors: Bohnes, F. A. (Intern), Gregg, J. S. (Intern), Laurent, A. (Intern)
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Electronic versions:
SustainAbstracts2017c.compressed_107.pdf
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

Environmental impacts of future urban deployment of electric vehicles: Assessment framework and case study of Copenhagen for 2016-2030
To move towards environmentally-sustainable transport systems, electric vehicles (EVs) are increasingly seen as viable alternatives to internal combustion vehicles (ICVs). To ensure effectiveness of such deployment, holistic assessments of environmental impacts can help decision-makers determine optimised urban strategies in a long-term perspective. However, explicit guidance and conduct of such assessments are currently missing. Here, we therefore propose a framework using life cycle assessment that enables the quantification of environmental impacts of a transport system at full urban scale from a fleet-based, foresight perspective. The analysis of the passenger car fleet development in the city of Copenhagen for the years 2016-2030 is used as a proof-of-concept. We modelled and compared five powertrain technologies, and we assessed four fleet-based scenarios for the entire city. Our results showed relative environmental benefits from range-extended and fuel-cell EVs over ICVs and standard EVs. These results were found to be sensitive to local settings, like electricity grid mix, which could alter the relative environmental performances across EV technologies. The comprehensive framework developed here can be applied to other geographic areas and contexts to assess the environmental sustainability of transport systems.

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Web of Science (2016): Indexed yes
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Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.777 SNIP 2.017 CiteScore 5.5
Web of Science (2014): Indexed yes
Environmental impacts of producing bioethanol and biobased lactic acid from standalone and integrated biorefineries using a consequential and an attributional life cycle assessment approach

This study evaluates the environmental impacts of biorefinery products using consequential (CLCA) and attributional (ALCA) life cycle assessment (LCA) approaches. Within ALCA, economic allocation method was used to distribute impacts among the main products and the coproducts, whereas within the CLCA system expansion was adopted to avoid allocation. The study seeks to answer the questions (i) what is the environmental impacts of process integration?, and (ii) do CLCA and ALCA lead to different conclusions when applied to biorefinery?. Three biorefinery systems were evaluated and compared: a standalone system producing bioethanol from winter wheat-straw (system A), a standalone system producing biobased lactic acid from alfalfa (system B), and an integrated biorefinery system (system C) combining the two standalone systems and producing both bioethanol and lactic acid. The synergy of the integration was the exchange of useful energy necessary for biomass processing in the two standalone systems. The systems were compared against a common reference flow: "1 MJEtOH + 1 kgLA", which was set on the basis of products delivered by the system C.
Function of the reference flow was to provide service of both fuel (bioethanol) at 99.9% concentration (wt. basis) and biochemical (biobased lactic acid) in food industries at 90% purity; both products delivered at biorefinery gate. The environmental impacts of interest were global warming potential (GWP100), eutrophication potential (EP), non-renewable energy (NRE) use and the agricultural land occupation (ALO). Regardless of the LCA approach adopted, system C performed better in most of the impact categories than both standalone systems. The process wise contribution to the obtained environmental impacts also showed similar impact pattern in both approaches. The study also highlighted that the recirculation of intermediate materials, e.g. C5 sugar to boost bioethanol yield and that the use of residual streams in the energy conversion were beneficial for optimizing the system performance.

**General information**

State: Published

Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Aarhus University

Authors: Parajuli, R. (Ekstern), Knudsen, M. T. (Ekstern), Birkved, M. (Intern), Djomo, S. N. (Ekstern), Corona, A. (Intern), Dalgaard, T. (Ekstern)

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- Web of Science (2016): Indexed yes
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- Scopus rating (2015): SJR 1.674 SNIP 1.642 CiteScore 4.33
- Web of Science (2015): Indexed yes
- BFI (2014): BFI-level 2
- Scopus rating (2014): SJR 1.635 SNIP 1.847 CiteScore 4.2
- Web of Science (2014): Indexed yes
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- ISI indexed (2013): ISI indexed yes
- Web of Science (2013): Indexed yes
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- ISI indexed (2012): ISI indexed yes
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- BFI (2011): BFI-level 2
- Scopus rating (2011): SJR 1.798 SNIP 1.681 CiteScore 3.61
- ISI indexed (2011): ISI indexed yes
- Web of Science (2011): Indexed yes
- BFI (2010): BFI-level 2
- Scopus rating (2010): SJR 1.644 SNIP 1.513
- Web of Science (2010): Indexed yes
- BFI (2009): BFI-level 1
- Scopus rating (2009): SJR 1.571 SNIP 1.602
- BFI (2008): BFI-level 2
- Scopus rating (2008): SJR 1.463 SNIP 1.501
- Web of Science (2008): Indexed yes
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Environmental impacts of stormwater management and pollutant discharges

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Authors: Brudler, S. (Intern), Arnbjerg-Nielsen, K. (Intern), Hauschild, M. Z. (Intern), Rygaard, M. (Intern)
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Environmental impacts of stormwater management and pollutant discharges

Stormwater management systems are necessary to protect people and assets from flooding and pollution, especially in densely built, sealed urban areas. The possible solutions range from underground pipes and basins, where rain water is often handled together with wastewater, to local and multi-functional solutions, e.g. rain beds or retention lakes. Ideally, these solutions are not only economically, but also environmentally sustainable. Risk assessments are sometimes carried out, e.g. to determine the effect of discharges during extreme events, but they lack a holistic perspective: While pollutants in runoff are one possible source of (local) environmental impacts, the stormwater management system itself is a source of emissions. Raw material extraction, construction, operation, renewal, and disposal all cause environmental impacts at a more regional or even global scale. These impacts can be quantified using life cycle assessment, which on the other hand usually neglects the impacts from local emissions, even though these may potentially be significant. By integrating local emissions into the assessment, we are able to quantify the total environmental impacts of stormwater management solutions.

We have tested the approach using a sub-catchment of Copenhagen. The existing stormwater management system has to be adapted to climatic changes to maintain existing flood safety levels. The environmental impacts from both local and global emissions over a period of 100 years have been quantified using life cycle assessment. The inventory for the assessment is based on an extensive literature research, planning documents and expert interviews. Here, we focus on the ecotoxicity impacts: The impact over the whole life cycle of the system, excluding local emissions, is 14 mio comparative toxic units (CTUe). This ecotoxicity impact is mainly caused by the emission of metals. Metals are, however, also important pollutants in stormwater runoff. In Copenhagen, the emission of stormwater pollutants from runoff are found to cause additional impacts of 19 mio CTUe when discharged directly to freshwater. If the water first infiltrates...
through soil, the impacts are significantly lower (10 mio CTUe). The stormwater system itself is passive, and mainly causes impacts during construction, while runoff goes through the system constantly over 100 years, which explains the large difference in impacts. The results are characterized by a high uncertainty, which is caused by large ranges in measured concentrations in literature (up to 5 orders of magnitude). Limiting these uncertainties is the subject of ongoing research.

Our results highlight the importance of including local emission of toxic compounds in stormwater management systems. Often, an increase in global emission, e.g. through the construction of treatment facilities, will lead to reduced local impacts, and vice versa. By taking into account both local and global impacts, stormwater management systems can be optimized holistically to minimize environmental impacts and create more sustainable stormwater management systems.
would be requiring higher. The environmental impacts of the selected biomasses in biorefinery therefore would differ based on the conversion efficiency, e.g. of the carbohydrates in the related biorefinery processes.

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Aarhus University
Authors: Parajuli, R. (Ekstern), Knudsen, M. T. (Ekstern), Djomo, S. N. (Ekstern), Corona, A. (Intern), Birkved, M. (Intern), Dalgaard, T. (Ekstern)
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Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.674 SNIP 1.642 CiteScore 4.33
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.635 SNIP 1.847 CiteScore 4.2
Web of Science (2014): Indexed yes
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Scopus rating (2013): SJR 1.527 SNIP 1.759 CiteScore 3.73
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BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.773 SNIP 1.811 CiteScore 3.7
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
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BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.571 SNIP 1.602
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.463 SNIP 1.501
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.407 SNIP 1.491
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.515 SNIP 1.605
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.442 SNIP 1.508
Web of Science (2005): Indexed yes
Environmental life cycle assessments of producing maize, grass-clover, ryegrass and winter wheat straw for biorefinery

The aim of this study is to assess the potential environmental impacts of producing maize, grass-clover, ryegrass, and straw from winter wheat as biomass feedstocks for biorefinery. The Life Cycle Assessment (LCA) method included the following impact categories: Global Warming Potential (GWP100), Eutrophication Potential (EP), Non-Renewable Energy use (NRE), Potential Fresh Water Ecotoxicity (PFWTtox) and Potential Biodiversity Damages (PBD). The results showed that GWP100 (in kg CO2 eq, including contribution from soil carbon change) for producing 1 ton of dry matter (t DM) was highest for ryegrass, grass-clover and maize, and lowest for straw. The carbon footprints of ryegrass, grass-clover and maize were affected by including the contribution from soil organic carbon (SOC) changes. Nitrous oxide emissions and emissions related to the production of agro-chemicals (including N-fertilizer) were other hotspots in the carbon footprint. The EP calculated per t DM was highest for grass-clover, ryegrass and maize, and was lowest for straw. NRE use (MJ eq/t DM) was highest for ryegrass, grass-clover and maize and lowest for straw. Major hotspots were diesel use for field operations and agro-chemicals production. The PBD, expressed as Potentially Disappeared Fraction (PDF) showed the highest adverse impact to biodiversity in maize, followed by straw, whereas the results showed relatively lower impact for ryegrass and grass-clover. The PFWTtox (CTUe/t DM), at farm level was highest for straw, followed by maize, whereas the values were significantly lower for grass-clover and ryegrass. These variations in ranking of the different biomasses productions using different impact categories for environmental performance showed that it is important to consider a wider range of impact categories for assessing environmental sustainability.

General information

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Aarhus University, Autonomous University of Barcelona
Authors: Parajuli, R. (Ekstern), Kristensen, I. S. (Ekstern), Knudsen, M. T. (Ekstern), Mogensen, L. (Ekstern), Corona, A. (Intern), Birkved, M. (Intern), Peña, N. (Ekstern), Graversgaard, M. (Ekstern), Dalgaard, T. (Ekstern)
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Web of Science (2017): Indexed yes
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Scopus rating (2016): CiteScore 5.83 SJR 1.615 SNIP 2.382
Environmental performance of gasified willow from different lands including land-use changes

A life-cycle assessment (LCA) of a low-input, short rotation coppice (SRC) willow grown on different Danish lands was performed. Woodchips are gasified, producer gas is used for co-generation of heat and power (CHP) and the ash-char output is applied as soil amendment in the field. A hybrid model was developed for the estimation of greenhouse gas (GHG) emissions from indirect land-use changes (iLUC) induced by willow cropping on arable land. For this, area expansion results from a general equilibrium economic model were combined with global LUC trends to differentiate between land transformation (as additional agricultural expansion, in areas with historical deforestation) and occupation (as delayed relaxation, DR, in areas with historical land abandonment) impacts. A biophysical approach was followed to...
determine the iLUCfeed emissions factor from marginal grassland. Land transformation impacts were derived from latest world deforestation statistics, while a commercial feed mix of equivalent nutritive value was assumed to substitute the displaced grass as fodder. Intensification effects were included in both iLUC factors as additional N-fertilizer consumption. Finally, DR impacts were included in both iLUC factors as additional N-fertilizer consumption.

ILUC results show that area related GHG emissions are dominant (93% of iLUCfood and 80% of iLUCfeed), transformation being more important (62% of iLUCfood) than occupation (11%) impacts. LCA results show that CHP from willow emits 4,047 kg CO2-eq ha−1occup−1 (or 0.8 gCO2-eq MJ−1) when grown on arable land, while sequestering 43,745 kg CO2-eq ha−1occup−1 (or -10.4 gCO2-eq MJ−1) when planted on marginal pastureland, and 134,296 kg CO2-eq ha−1occup−1 (or -31.8 gCO2-eq MJ−1) when marginal abandoned land is cultivated. Increasing the bioenergy potential without undesirable iLUC effects, especially relevant regarding biodiversity impacts, requires that part of the marginally used extensive grasslands are released from their current use or energy cropping on abandoned farmland incentivized.
primary aluminium production and energy consumption in the ABC production as the hotspots in the life cycle of the ABC. The toxicity and energy-related impact categories show the highest susceptibility to increasing recycled content and recycling rate, while the technological novelties show little effect. In terms of abiotic resource depletion the introduction of novel technologies could have the potential to retain quality of the aluminium alloys by either establishing dedicated waste streams or upgrading the aluminium scrap by dedicated sorting strategies.

**General information**

State: Published  
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, KU Leuven  
Authors: Stotz, P. M. (Intern), Niero, M. (Intern), Bey, N. (Intern), Paraskevas, D. (Ekstern)  
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BFI (2016): BFI-level 1  
Web of Science (2016): Indexed yes  
BFI (2015): BFI-level 1  
Scopus rating (2016): CiteScore 3.73 SJR 1.16 SNIP 1.709  
Web of Science (2016): Indexed yes  
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Scopus rating (2015): SJR 1.275 SNIP 1.915 CiteScore 3.98  
Web of Science (2015): Indexed yes  
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Scopus rating (2013): SJR 1.432 SNIP 2.184 CiteScore 3.34  
Web of Science (2013): Indexed yes  
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Scopus rating (2012): SJR 1.262 SNIP 1.811 CiteScore 2.91  
ISI indexed (2012): ISI indexed yes  
Web of Science (2012): Indexed yes  
BFI (2011): BFI-level 1  
Scopus rating (2011): SJR 1.119 SNIP 1.848 CiteScore 2.62  
ISI indexed (2011): ISI indexed yes  
Web of Science (2011): Indexed yes  
BFI (2010): BFI-level 1  
Scopus rating (2010): SJR 1.163 SNIP 1.82  
Web of Science (2010): Indexed yes  
BFI (2009): BFI-level 1  
Scopus rating (2009): SJR 1.143 SNIP 1.647  
BFI (2008): BFI-level 1  
Scopus rating (2008): SJR 0.803 SNIP 1.302  
Web of Science (2008): Indexed yes  
Scopus rating (2007): SJR 0.783 SNIP 1.708  
Web of Science (2007): Indexed yes  
Scopus rating (2006): SJR 0.933 SNIP 1.688  
Scopus rating (2005): SJR 0.719 SNIP 1.426  
Scopus rating (2004): SJR 1.031 SNIP 1.425
Errors, lies and misunderstandings: Systematic review on behavioural decision making in projects

This paper provides a systematic review of the literature on behavioural decision making in projects. The field is blooming, and given the relevance of decisions in projects and the strong theoretical foundations of behavioural decision making, it offers to contribute to practice and theory in projects and beyond. However, the literature is fragmented and draws only on a fraction of the recent, insightful, and relevant developments on behavioural decision making. This paper organizes current research in a conceptual framework rooted in three schools of thinking—reductionist (on cognitive limitations—errors), pluralist (on political behaviour—lies), and contextualist (on social and organizational sensemaking—misunderstandings). Our review suggests avenues for future research with a wider coverage of theories in cognitive and social psychology and critical and mindful integration of findings and concepts across three schools.
Er vejvrede en uheldsfaktor

En ny undersøgelse fra Canada viser, at bilister der udviser aggression, når de kører bil, i højere grad er involveret i færdselsuheld end bilister, der ikke udviser aggression, er. Dette gælder også for bilister, der kun udviser mindre alvorlige former for aggression som fx at bande, lave fagter eller råbe ad andre trafikanter. Der mangler dog stadig viden om, hvorfor aggression i trafikken giver øget uheldsrisiko.

Essential Societal Service Functions and Planetary Boundaries: The Case of Sustainable Urban Water Management

General information
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Authors: Sarup, H. J. D. (Intern), Brudler, S. (Intern), Godskesen, B. (Intern), Dong, Y. (Intern), Rygaard, M. (Intern), Lerer, S. M. (Intern), Ambjerg-Nielsen, K. (Intern)
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Relations
Estimating soil emissions and toxicity impacts from the application of livestock manure: application to heavy metals at national scale

Aiming for a more efficient use of resources, the European Commission encourages the use of animal manure as a fertilizer providing nutrients and organic matter to improve crop productivity and soil fertility [1,2]. However livestock manure contains traces from pathogens, veterinary medicines and feed additives (e.g. antibiotics and heavy metals), which may cause damages to ecosystems and human health. To prevent large damages from happening, tools such as Environmental risk assessment (ERA) and life cycle assessment (LCA) are used to evaluate the environmental risks and impacts of the pollutant emissions resulting from manure application. Both methodologies first require an estimation of the emissions to soil as part of their respective stages of exposure assessment and life cycle inventory analysis.

To provide consistent support to high level policy-makers, e.g. supporting regulations on the use of such substances in livestock production, large-scale assessments are required. To date, the total emissions of harmful substances resulting from the application of manure at country level have however been rarely quantified. We therefore developed a framework to estimate these releases to soil in a systematic way. We applied it to emissions of 8 heavy metals (HMs) in 215 countries from 2000 to 2014 and analysed the resulting environmental toxicity-related impacts based on life cycle impact assessment.

Et nyt boligprisindeks for Storkøbenhavn

Europæernes rejsevaner belyst igennem Ferie- og Forretningsrejseundersøgelserne


Papirer præsenterer først en oversigt over rejsefrekvensen i de enkelte lande og en sammenstilling af, hvor stor en del af de enkelte landes befolkning, der foretager private udlands og indenlands rejser med overnatning af forskellig varighed. Derefter gennemføres en analyse af udviklingen i rejsefrekvenser på private udlandsrejser med mindst 4 overnatninger. Analyserne viser, at de 30 lande kan inddeles i 3 grupper, 1) de gamle mellem- og nordeuropæiske medlemslande med den højeste rejsefrekvens på private udlandsrejser og den største andel af befolkningen, der er rejseaktiv, 2) 5 Middelhavslande med en meget lav rejsefrekvens på private udlandsrejser, men med en væsentlig større andel der holder ferie m.v. indenlands samt 3) de nye medlemslande, der har en lavere rejsefrekvens end førstnævnte gruppe, men væsentlig højere end middelhavslanedene.

Analyseren af udviklingen i rejseaktivitet viser en samlet indkomstelasiticitet på 1,8 for alle land under ét, og væsentlig over 1 for de 3 grupper hver for sig. Et muligt mætningspunkt i udviklingen diskuteres. Dette foreslås at ligge ved at ca. 90% af befolkningen rejser udenlands årligt og har ca. 2 rejser i gennemsnit. Men hertil kommer de kortere rejser, typisk weekendrejser, som ikke er analyseret i detaljer i dette papir.

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State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling
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Original language: Danish
Evaluating Climate Change Mitigation Potential of Carbonaceous Materials: Do Different Indicators Point to the Same Conclusion?

Evaluating climate change mitigation potential of hydrochars: compounding insights from three different indicators

We employed life cycle assessment to evaluate the use of hydrochars, prospective soil conditioners produced from biowaste using hydrothermal carbonization, as an approach to improving agriculture while reusing carbon present in the biowaste. We considered six different crops (barley, wheat, sugar beet, fava bean, onion and lucerne) and two different countries (Spain and Germany), and used three different indicators of climate change: global warming potential (GWP), global temperature change potential (GTP), and climate tipping potential (CTP). We found that although climate change benefits (GWP) from just sequestration and temporary storage of carbon are sufficient to outweigh impacts stemming from hydrochar production and transportation to the field, even greater benefits stem from replacing climate-inefficient biowaste management treatment options, like composting in Spain. By contrast, hydrochar addition to soil is not a good approach to improving agriculture in countries where incineration with energy recovery is the dominant treatment option for biowaste, like in Germany. Relatively small, but statistically significant differences in impact scores were found between crops. Although these conclusions remained the same in our study, potential benefits from replacing composting were smaller in the GTP approach, which due to its long-term perspective gives less weight to short-lived GHGs like methane. Using CTP as indicator we also found that there is a risk of contributing to crossing of a short-term climatic target, the tipping point corresponding to an atmospheric GHG concentration of 450 ppm CO2 equivalents, unless hydrochar stability in the soil is optimized. Our results highlight the need for considering complementary perspectives that different climate change indicators offer, and overall provide a foundation for assessing climate change mitigation potential of hydrochars used in agriculture.

Evaluating climate change mitigation potential of hydrochars: compounding insights from three different indicators
Evaluating Measures for Inclusion in a Technology Action Plan

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Organisations: Department of Management Engineering, UNEP DTU Partnership
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Evaluating the police service quality for handling traffic crash reporting: A combined MCDA and LCA approach

Purpose The phenomenon of traffic crash under-reporting has been extensively documented in terms of its extent, but not equally analysed in terms of its reasons. As police distrust has been recently identified as a major reason for crash under-reporting, the purpose of this paper is to look at the police service quality for handling the reporting of traffic crashes.

Design/methodology/approach This study introduces a novel approach to evaluate service quality that combines multi-criteria decision analysis (MCDA) with latent class analysis (LCA). Moreover, this study presents the design of a web-based survey on the basis of the SERVQUAL approach to detecting strengths, opportunities and threats with crash reporting to the police at a strategic level. Transportation stakeholders (e.g. researchers, authorities, consultants, NGO representatives, suppliers) with an interest in traffic safety in Denmark participated in the survey that yielded 86 complete responses. Findings The novel approach was successfully applied and its implementation demonstrated the usefulness of the tool even in countries with a high police service. Results showed that the participating stakeholders perceived human factors as more important than physical factors in order to increase the crash reporting, with responsiveness as the most important and tangibles as the least important dimensions. Nevertheless, most stakeholders viewed a mixture of human and physical factors as crucial to increase crash reporting rates. Originality/value This study advances the knowledge about police service quality with a novel expert-based decision support tool based on SERVQUAL, MCDA and LCA, demonstrates its applicability in countries with a high-police service, and opportunities and barriers for increasing the crash reporting rate.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Management Science, Operations Management, University of Queensland, Hebrew University of Jerusalem
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Pages: 410-425
Event characteristics that disrupt transport system’s balance

The life of the city is often reflected in traffic patterns: popular sporting events draw crowds, holidays create disruptions, protests may result in road closures, etc. Decades of research on travel demand and network modelling already provide satisfying predictive tools. However, the main research focus has been on regular behaviour, such as peak/off-peak cycles, regular functioning of the infrastructure, and normal weather conditions. Consequently, non-recurrent events severely challenge such models. Under non-recurrent circumstances, the typically expected correlation structures (e.g. between demand flows in neighbor areas; between current and recent values of traffic speeds or travel times) are drastically affected, severely affecting predictions. It is therefore necessary to take into consideration data from different sources. The objective of this research is the development of a methodology that correlates high taxi demand...
observations with popular events retrieved from Social Media platforms. Using NYC taxi trips public dataset, the average demand of the day was determined using kernel density analysis. Days that showed significant outliers compared to the average day were further studied using a dataset of around 116000 events. The second dataset was retrieved from the Web for the same 6 months period through the direct use of APIs. The correlation step includes the comparison of spatial and temporal kernel density depiction of taxi pick-up locations and events retrieved details. Through the correlation evaluation of traffic data and semantic information, conclusions were made on how the demand of taxi pick-ups changes based on certain event characteristics.

**Evolution of the Jatropha Biofuel Niche in Ghana**

This article draws on the multi-level perspective (MLP) and global value chain (GVC) frameworks to analyse the drivers and trajectories of foreign private investment in biofuel production in Ghana. The analyses are based on a narrative of the evolution of a niche for jatropha production in Ghana spanning the period 1995–2004 and including detailed company case studies. Relating to the MLP framework the factors analysed influencing internal niche processes are alignment of expectations, network formation, and learning and knowledge sharing, while those relating to the GVC framework are value chain attributes, including chain structure, governance, ownership, and access to land and capital. The study identifies significant entry barriers to establishing new agriculture-based value chains for global biofuel markets, especially high volume requirements, high capital needs and international market risks, which contributed to the collapse of the jatropha sector in Ghana and thus to the failure to capitalise on the initially high expectations of biofuel production. We also found a low level of learning and knowledge sharing between jatropha niche actors in Ghana, which, alongside weak public R&D support, reduced access to locally specific technical and managerial information. The report presents an example of non-evolutionary niche development, which goes beyond the European experience of industrial niche development on which the MLP framework was first established. The importance of investors and policy at different levels of the value chain illustrates the synergies that may be obtained from combining the MLP and GVC frameworks in research on energy transitions in developing countries.

**Expatriate academics and perceptions of organisational support**

Research on Perceived Organisational Support (POS) rarely focuses on the potential gap between employee perceptions versus the support the organisation purports to offer. An understanding of this may provide greater insight into the interventions a university should be making if it hopes to improve retention of its expatriate academics. By analysing
qualitative responses to a written questionnaire, this paper explores the perceptions of organisational support held by 163 expatriate academics employed at a large international Danish university, and compares these perceptions to the support the university claims to offer. Our study reveals that, in the case of expatriate academics, even extensive offerings of organisational support can be insufficient if the existence and specific benefits of the support are not adequately communicated, and if the academics do not trust the source of the support on offer. Theoretical and practical implications are discussed.

Experiences with auctions for renewable energy support

Auctions is an increasingly popular instrument for introducing competitiveness in the support schemes for renewable energy, however, designing successful auctions appears to be a challenge. Policy makers seeking to introduce auctions are faced with a range of design choices, which may affect the auction outcome significantly. This paper investigates the past experiences with auction implementations in 13 countries. We highlight popular design choices and evaluate auction performances based on a set of assessment criteria. We find that as a market-based support mechanism auctions can help driving down support costs, however, they are also prone to design errors. Adjusting the auction design to the specific conditions (national and marked) is a key parameter for success.
Exploring REACH as a potential data source for characterizing ecotoxicity in life cycle assessment

Toxicity models in life cycle impact assessment (LCIA) currently only characterize a small fraction of marketed substances, mostly because of limitations in the underlying ecotoxicity data. One approach to improve the current data situation in LCIA is to identify new data sources, such as the European Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) database. The present study explored REACH as a potential data source for LCIA based on matching reported ecotoxicity data for substances that are currently also included in the United Nations Environment Programme/Society for Environmental Toxicology and Chemistry (UNEP/SETAC) scientific consensus model USEtox for characterizing toxicity impacts. Data are evaluated with respect to number of data points, reported reliability, and test duration, and are compared with data listed in USEtox at the level of hazardous concentration for 50% of the covered species per substance. The results emphasize differences between data available via REACH and in USEtox. The comparison of ecotoxicity data from REACH and USEtox shows potential for using REACH ecotoxicity data in LCIA toxicity characterization, but also highlights issues related to compliance of submitted data with REACH requirements as well as different assumptions underlying regulatory risk assessment under REACH versus data needed for LCIA. Thus, further research is required to address data quality, pre-processing, and applicability, before considering data submitted under REACH as a data source for use in LCIA, and also to explore additionally available data sources, published studies, and reports.
Exploring the dynamics of firm and innovation community collaboration: A complex love story

The classic fairy tale of The Little Mermaid (Andersen 1836) tells the story of the little mermaid falling in love with a prince from the unknown and different world over the sea inhabited by humans. She tries to access this world by exchanging her voice for a pair of human legs. Although she accepts the fierce pain of walking, she can never fully transcend the boundaries of their separate worlds and when the prince does not return her love, she dissolves into foam. However, instead of ceasing to exist, the little mermaid transforms into a new spiritual form floating above the stars. She will never be able to be with her prince and satisfy her desire for the human world, but her transformation renders it possible to obtain an immortal soul and rise up into the kingdom of God.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, University of Cambridge
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Family violence: A spatial and socio economic profile

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BFI (2011): BFI-level 1
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Får Danmark en visionær byggepolitik?

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Organisations: Department of Management Engineering, Engineering Systems
Authors: Bonke, S. (Intern), Olsen, I. S. (Intern)
Pages: 8-8
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FDG at 7.8 MeV
I here report the fundamental performance of a new generation of compact medical cyclotrons for hospital-based PET tracer manufacture, exemplified with the FDG production numbers achieved by the first prototype of the GE GenTrace cyclotron. The proton energy is 7.8 MeV. After 3 years of extensive testing in a "physics lab" setting, which is door-to-door with our normal GMP production suite, I can now conclude that this cyclotron in conjunction with a standard GE Fastlab chemistry box easily achieves significant, reliable and compliant FDG output surpassing 15 GBq per batch at EOS, after 2 hours bombardment time. The details are reported below.
Feasibility of wind power integration in weak grids in non-coastal areas of Sub-Saharan Africa: the case of Mali

Installed wind capacity in Africa has grown rapidly the last few years, and by late 2016 had reached about 4.8 GW. However, so far few investments have been made in inland localities due to the generally lower wind potential. This paper therefore explores if and to what extent it is possible to establish economically feasible wind-power plants in countries with lower wind potential. To address this question, the paper provides a combined wind resource mapping and a pre-feasibility study for grid integration of wind power at four specific sites in Mali. The study finds that Mali has generally poor wind conditions, with average wind speeds of below 5 m/s at 50 m above ground level in the south, while there are larger areas in the northern part with average wind speeds of above 7 m/s at 50 m above ground level. Overall the research shows that in countries with generally poor wind conditions, such as in the southern part of Mali, it is possible to identify a limited number of sites with local speed-up effects situated close to the existing grid, at which there are options for undertaking medium-size wind-power projects that would be economically feasible at current crude oil prices of 50 USD/barrel.
Flexibility-friendly support policies: A Nordic and Baltic perspective

This paper introduces the concept of flexibility-friendly support policies, i.e. state-of-the-system-dependent subsidies given to producers of electricity who base their output on renewable energy sources (RES). Such policies increase with demand, decrease with the availability of Variable Renewable Energy (VRE) producers and, overall, follow the power system’s residual load. The paper presents a microeconomic framework to analyze this and other desirable properties of support mechanisms. To illustrate the concept, it uses the present-day policies of Nordic and Baltic countries (Denmark, Estonia, Finland, Latvia, Lithuania, Sweden and Norway) as a case study.

Flexible electricity markets for a decarbonised energy system

This paper introduces the concept of flexible electricity markets, i.e. markets that can effectively accommodate variable renewable energy (VRE) production and demand. The paper presents a microeconomic framework to analyze this and other desirable properties of flexible electricity markets. To illustrate the concept, it uses the present-day markets of Europe as a case study.
Flow Formulations for Curriculum-based Course Timetabling

In this paper we present two mixed-integer programming formulations for the Curriculum based Course Timetabling Problem (CTT). We show that the formulations contain underlying network structures by dividing the CTT into two separate models and then connect the two models using flow formulation techniques. The first mixed-integer programming formulation is based on an underlying minimum cost flow problem, which decreases the number of integer variables significantly and improves the performance compared to an intuitive mixed-integer programming formulation. The second formulation is based on a multi-commodity flow problem which in general is NP-hard, however, we prove that it suffices to solve the linear programming relaxation of the model. The formulations show competitiveness with other approaches based on mixed-integer programming from the literature and improve the currently best known lower bound on one data instance in the benchmark data set from the second international timetabling competition. Regarding upper bounds, the formulation based on the minimum cost flow problem performs better on average than other mixed integer programming approaches for the CTT.

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Authors: Bagger, N. F. (Intern), Kristiansen, S. (Ekstern), Sørensen, M. (Ekstern), Stidsen, T. J. R. (Intern)
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FM knowledge – theoretical foundation and application in practice.
The idea behind this special issue can be dated back to a whole day workshop that I organised on 7 November 2012 at our Centre for Facilities Management – Realdania Research (CFM), Technical University of Denmark. The title of the workshop was “Added Value and Advancements in FM knowledge”. The situation was that I since 2009 had chaired a European research group in EuroFM concerning “The Added Value of FM”. In spring 2012 this collaborative research work had culminated in publishing an anthology (Jensen et al., 2012). The purpose of the workshop was to discuss and possibly decide, whether we should continue collaborative research in the same vein or change direction towards other areas of joint interest. The 9 participants were from CFM and our closest collaboration partners in Denmark, Finland, Netherlands, Norway, Sweden, Switzerland and UK.

General information
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Foresighting for Inclusive Development

We propose that foresight can contribute to inclusive development by making innovation systems more inclusive. Processes of developing future oriented innovation policies are often unsuccessful and rarely inclusive. We conceptualize such processes as foresighting. We focus on how the ex-ante design of policymaking processes affects the actual process with a focus on inclusion, and we discuss how it affects policy effectiveness and innovation system transformation. Our argument is that processes of policymaking must be inclusive to affect and transform innovation systems because a set of distributed actors, rather than ministries and innovation agencies, is the gatekeepers of change. From this perspective, inclusion is a precondition rather than an obstacle for transformation. Based on the notion of innovation system foresight, we develop an analytical framework that we use to study design and processes in foresight cases in two emerging economies: Brazil and South Korea. We conclude that better systemic and innovation oriented foresight is needed to enhance inclusive development.
Foreword

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Forks in the road to e-mobility: An evaluation of national policy mixes in northwest Europe

Passenger mobility is one of the significant and growing contributors to global climate change. Also, local air pollution limit values for PM10 and NOx are regularly exceeded at traffic monitoring sites across the European Union (Althaus 2011). Policymakers have recognized these problems associated with internal combustion engine (ICE) car mobility and implemented various policies, most notably regulations regarding vehicle emissions at EU level and also stimulation of low carbon fuel and propulsion systems at both EU and national level, including electric mobility. This paper evaluates how policy shaped the emergence of electric mobilities in three countries. Since there is not just one instrument affecting electric mobility, but rather a range of policy instruments (i.e. both newly introduced and established ones that affect all cars), this requires understanding the interactions between these instruments. Other studies have evaluated the effect of financial instruments or recharging infrastructure separately (e.g. Sierzchula et al 2014 through correlation analysis), but such studies neglect or ignore interaction effects between instruments. Our aim is to highlight interaction effects and contribute empirically to the literature on policy mixes. The research question is: what are effective and (in)efficient policy mixes for electric mobility and why? We use the framework of Givoni et al (2013) to analyse the interaction effects of policy instruments. They distinguish three types of relationships: (1) preconditioned linkages, where the successful implementation of one measure is completely contingent on another; (2) synergetic linkages, where the functional capacity of a measure is enhanced by another, and; (3) contradictory linkages, where two or more countervailing policy measures undermine the functional capacity of one or both. For each country, policy and related reports are reviewed, policy mixes presented and patterns of full battery-electric vehicle (FBEV) diffusion compared. Moreover, we conducted a set of interviews and expert roundtables in each country in order to record stakeholder views on policy interactions and the subsequent effect on the effectiveness and efficiencies of the policy mixes. This included 18 semistructured personal interviews with policy makers, researchers, NGOs, project managers, business employees, and branch organizations in Denmark (11), Norway (8) and the Netherlands (8) during 2013-2015. Interviews were conducted both with people directly involved in policy decisions and implementation ('insiders') and with experts and stakeholders with good knowledge of e-mobility policies but not directly engaged in their making or implementation ('outsiders'). Norway exhibits high – and rapidly growing – levels of penetration of FBEVs, whereas Denmark presently shows limited FBEV adoption. In the Netherlands, e-mobility has grown relatively fast (although for about 85% plug-in hybrid, not FBEVs), and not only in terms of use, but also in business development associated with the recharging infrastructure. The first finding of this paper is that demand side policies, in combination with the creation of a charging infrastructure can be considered preconditions for FBEV in view of the very small diffusion in countries where one of those elements is missing, such as Estonia for example. A variety of demand-side measures, such as free toll roads and free parking, free use of bus lanes, in combination with sales tax and annual road tax exemption, contributed significantly to the fast growth of FBEV sales in Norway. Contradictory effects were observed in the Netherlands, where the support for cleaner (more fuel-efficient) ICEV encouraged probably some people to opt for a cleaner ICEV rather than an FBEV. Undesirable synergetic effects were also observed in the Netherlands, in the 1 2 2 3 4 1 2 3 4 form of the existence of multiple subsidy schemes for company car users, which led them to buy electric vehicles for purely economic reasons, leading to the undesirable effect of the cars being driven primarily (80%) in fossil-fuel mode, which meant that a good deal of the money for promoting electric mobility and cleaner air was being misspent. Another important lesson is that it is indeed possible to stimulate FBEVs through a set of synergetic policies. In Norway there was strong alignment between national policies (purchase and annual tax exemption) and local policies (toll road and parking exemption), which, in combination, acted as a significant pull for FBEV adopters. Over-stimulation of FBEV leads to perverse effects, however. There is a cautionary lesson. Although demand-side measures for FBEV are key— and total-cost-of-ownership of FBEV should be lower than with ICE to encourage uptake—, the difference should not be too great. An imbalance in incentives may instead simply lead to extra kilometres driven and extra vehicles bought (PHEV or FBEV as an additional vehicle instead of an ICEV replacement). The case of Denmark also brings home an important lesson for policy. There is the danger of relying too much on a specific technology configuration as was the case with the battery swapping model, where only one type of vehicle was available (the Renault Fluence Z.E.). Innovation experiments with infrastructure are generally useful but not if they increase uncertainty on the consumer side too much.
For the development of nationally appropriate mitigation actions (NAMAS): A primer on Energy Efficient Buildings in Tropical and Subtropical Climates

This Guidebook aims to be a practical resource for governments (ministries of energy, environment, housing, climate change, finance, planning and others), private sector investors and civil society organizations by illustrating how to create a NAMA for energy efficient buildings based on a country-led national strategy, possibly articulated as a Nationally Determined Contribution. Some countries may already have developed a strategy for energy efficient buildings or may be in the process of developing one, such as Singapore’s Green Mark initiative or Mexico’s NAMA on Sustainable Housing, ‘EcoCasa’. Other countries may have an interest in formulating a NAMA as the concrete implementation model for such an NDC, indicating how the country will turn the NDC into practice. And still others may wish to develop a NAMA without having developed an NDC or a sector-wide strategy first.

No matter the point of departure, articulating a NAMA requires communication with stakeholders, including citizens, the private sector, and national and international financiers. This guidebook is divided into five main sections: an introduction to NAMAs; an Overview of Technologies and Possible Intervention Areas, the Structuring of NAMAs for Energy Efficient Buildings; Measuring, Reporting and Verifying NAMAs; and Financing for NAMAs. The latter four may be regarded as the fundamental building blocks for NAMA development. Throughout the text the main messages are illustrated by the example of Singapore’s recently introduced policy for energy efficiency improvements in existing buildings.

Frames, agency and institutional change: the case of benchmarking in Danish construction

This study examines change and the sources influencing the formulation and diffusion of policies in construction. The change examined is the introduction of a benchmarking policy initiative in the Danish construction industry. Using institutional theory with emphasis on the concepts of frames and framings, we show how strategically motivated actors are able to frame policy problems in ways that disclose the mixture of motives, interests and institutional mechanisms at play in change processes. In doing so, we contribute to the literature on the role of agency in institutional change and the framing of policy problems. We conclude by highlighting how insights gained from the framing perspective present a challenge to the dominant comprehensive rationalist view of the policy process and the formulation and implementation of reform initiatives.
Framework conditions for flexibility in the Gas – Electricity interface of Nordic and Baltic countries: A focus on Power-to-Gas (P2G)

General information
Livestock manure is commonly applied on agricultural land for its fertilising properties. However, the presence of toxic substances in animal manure such as pathogens, antibiotics and heavy metals, can result in damages to ecosystems and human health. To date, although relevant for policy-making, e.g. regulation framing, their releases to agricultural land have been incompletely and inconsistently quantified at global and national scales. Here, we thus developed a generic framework for estimating such releases based on the quantities of manure applied and concentrations of toxic substances. Applying this framework, we built a global release inventory for arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc differentiated into 215 countries and 15 years (period 2000-2014). Comparisons with more narrowly-focused inventories showed overall consistency in our inventory results, although a number of uncertainties and limitations were identified. In particular, the need for harmonising sampling and analytical methods for estimating heavy metal contents in manure and generating more country-differentiated data, especially for developing countries, should be prioritised by future research studies. Using life cycle impact assessment methods, it was additionally found that mercury, zinc and copper are the substances contributing the most to the toxic impacts on human health and freshwater ecosystems resulting from manure application to land. While countries such as China, India, Russia, Brazil and the United States of America contributed to half the heavy metal releases from manure application worldwide, the impact intensity per area of agricultural land was observed to be highest for island countries, the European Union and South-East Asia because of higher per-area applications of manure. These findings demonstrate the need to perform country-specific impact assessment to support policy-making regulating the concentrations of toxic substances such as heavy metals in utilised manure.
Framework to Define Structure and Boundaries of Complex Health Intervention Systems: The ALERT Project

Health intervention systems are complex and subject to multiple variables in different phases of implementation. This constitutes a concrete challenge for the application of translational science in real life. Complex systems as health-oriented interventions call for interdisciplinary approaches with carefully defined system boundaries. Exploring individual components of such systems from different viewpoints gives a wide overview and helps to understand the elements and the relationships that drive actions and consequences within the system. In this study, we present an application and assessment of a framework with focus on systems and system boundaries of interdisciplinary projects. As an example on how to apply our framework, we analyzed ALERT [an integrated sensors and biosensors’ system (BEST) aimed at monitoring the quality, health, and traceability of the chain of the bovine milk], a multidisciplinary and interdisciplinary project based on the application of measurable biomarkers at strategic points of the milk chain for improved food security (including safety), human, and ecosystem health (1). In fact, the European food safety framework calls for science-based support to the primary producers’ mandate for legal, scientific, and ethical responsibility in food supply. Because of its multidisciplinary and interdisciplinary approach involving human, animal, and ecosystem health, ALERT can be considered...
as a One Health project. Within the ALERT context, we identified the need to take into account the main actors, interactions, and relationships of stakeholders to depict a simplified skeleton of the system. The framework can provide elements to highlight how and where to improve the project development when project evaluations are required.

**General information**

State: Published
Organisations: National Food Institute, Research Group for Genomic Epidemiology, Transport DTU, Department of Management Engineering, Quantitative Sustainability Assessment, Istituto Superiore di Sanita, University of Zurich
Authors: Boriani, E. (Intern), Esposito, R. (Ekstern), Frazzoli, C. (Ekstern), Fantke, P. (Intern), Hald, T. (Intern), R. Rüegg, S. (Ekstern)
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Publication: Research - peer-review › Journal article – Annual report year: 2017

**From passive to active actors in the power market - Increasing the value of wind**

**General information**

State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Skytte, K. (Intern)
Publication date: 2017

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Size: 15
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Main Research Area: Technical/natural sciences
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**FTA and Innovation Systems**

This special issue is one of the outputs of the 5th International Conference on Future-Oriented Technology Analysis held in Brussels 27-28 November 2014. The articles in the special issue were selected from the manuscripts presented at the conference considering their relevance for Foresight and Innovation Systems. A few additional articles have been accepted through an open ‘call for papers’ process for this special issue.

**General information**

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Web of Science (2015): Indexed yes
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Scopus rating (2014): SJR 1.291 SNIP 1.781 CiteScore 2.88
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BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.281 SNIP 1.739 CiteScore 2.93
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Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.507 SNIP 2.009 CiteScore 2.92
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Scopus rating (2011): SJR 1.094 SNIP 1.582 CiteScore 2.37
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Scopus rating (2010): SJR 1.018 SNIP 1.47
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.838 SNIP 1.589
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Scopus rating (2008): SJR 0.848 SNIP 1.502
Scopus rating (2007): SJR 0.628 SNIP 1.377
Scopus rating (2006): SJR 0.568 SNIP 1.171
Scopus rating (2005): SJR 0.527 SNIP 1.614
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.343 SNIP 0.897
Scopus rating (2003): SJR 0.409 SNIP 0.97
Scopus rating (2002): SJR 0.431 SNIP 1.007
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.609 SNIP 0.843
Scopus rating (2000): SJR 0.209 SNIP 0.304
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.272 SNIP 0.986
Original language: English
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Fusion power in a future low carbon global electricity system

Fusion is one of the technologies that may contribute to a future, low carbon, global energy supply system. In this article we investigate the role that it may play under different scenarios. The global energy model ETM (originally EFDA TIMES Model) has been used to analyse the participation of fusion technologies in the global electricity system in the long term. Results show that fusion technologies penetration is higher in scenarios with stricter CO2 emissions reduction targets. In addition, investment costs and discount rates of fusion technologies are key factors for fusion implementation. Finally, the main competitors for fusion in future are Carbon Capture and Storage and fission technologies.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas, EURATOM-ENEA sulla Fusione, Italian National Agency for New Technologies, Research Studios Austria Forschungsgesellschaft mbH, Culham Centre for Fusion Energy
Authors: Cabal, H. (Ekstern), Lechón, Y. (Ekstern), Bustreo, C. (Ekstern), Gracceva, F. (Ekstern), Biberacher, M. (Ekstern), Ward, D. (Ekstern), Dongiovanni, D. (Ekstern), Grohnheit, P. E. (Intern)
Number of pages: 8
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Main Research Area: Technical/natural sciences

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Original language: English
Climate change, Energy modelling, Fusion technologies, Global power system
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Source: FindIt
Source-ID: 2348853932
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Future visions for electric vehicle deployment in Denmark: stakeholder based scenario development.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Gregg, J. S. (Intern)
Number of pages: 17
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Media of output: Power Point Presentation
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Getting the chemicals right: Gaps and opportunities in addressing inorganics in life cycle assessment

Life cycle assessment (LCA) is used to compare products and product systems in terms of their environmental sustainability and for that LCA needs to include all potential impacts on humans and the environment. Currently, quantifying the toxicity potential of several thousand organic substances and certain cationic metals is included in existing characterization models within life cycle impact assessment (LCIA). However, a variety of additional inorganic substances used e.g. in the textile, personal care, and building and construction industry are included neither in current life cycle inventory databases, nor current LCIA methods. Without the integration of the various economically relevant and potentially human toxic and/or ecotoxic inorganic substances such as inorganic salts, acids, bases and elements, however, no satisfying conclusions regarding the environmental sustainability of any technology containing any of these substances can be drawn. We provide an overview of different substance groups already incorporated in LCIA toxicity characterization modeling, the economic and environmental relevance of inorganic chemicals, and an outline of possible ways towards incorporating inorganic chemicals in LCIA toxicity characterization. The analysis of existing LCIA approaches of specific organic and inorganic chemical groups including PFASs, nanoparticles, salts causing salinization, and common ionic liquids show that the fate, exposure and effect modeling have to be adapted at various levels for the characterization of inorganic substances other than cationic metals. Differences in physicochemical properties and environmental fate and transformation processes of these specific substance groups compared to inorganic substance groups show that the existing LCIA model USEtox cannot be applied to inorganic substances without further modification towards including specific reaction- and process-kinetics. Possibly relevant chemical reaction pathways will be outlined as a necessary step toward improving the environmental fate and (human and ecosystem) exposure assessment of various inorganic substances. Also, we present an overview of the availability of ecotoxicity and human toxicity effect data for elements and inorganic compounds in state-of-the-art databases. An overview of how conventional toxicity effect data can be adapted and used for estimating toxicity-related effects of inorganic substances on humans and ecosystems will be provided.

General information

State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Fantke, P. (Intern), Kirchhübel, N. (Intern)
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Global Guidance On LCIA Indicators: Impacts Of Particulate Matter And Of Land Use
Improving life cycle impact assessment models is crucial. The flagship project of the UNEP-SETAC Life Cycle Initiative provides global guidance and consensus on environmental LCIA indicators for climate change, particulate matter impacts, land use impact on biodiversity, water scarcity and water use impacts on human health. We present the recommendations and latest developments in two impact categories, particulate matter and land use.

We present a framework for calculating characterization factors for indoor and outdoor emissions of primary PM2.5 and secondary PM2.5 precursors, enabling to account for the exposure to fine particulate matter (PM2.5) pollution in LCA, a major contributor to human disease burden. The model first provides default aggregated exposure factors for archetypal indoor and outdoor, urban and rural sources. It then customizes these archetype for 3646 real-world urban areas in 16 sub-continental regions. Population intake fractions (iF) are highest in Southeast Asia, with 95% of the iF ranging from 4.3 to 160 ppm across 3646 cities (population-weighted mean of 39 ppm) and from 0.2 to 6.3 ppm (mean 2 ppm) across the 16 sub-continental rural regions. Intake fractions in residential and occupational indoor source environments range from 470 ppm to 62000 ppm, as function of air exchange rate and occupancy. Indoor exposure typically contributes 80–90% to overall exposure from outdoor sources. These intake fractions are then combined with average and marginal non-linear dose-response slope and severity factors to yield characterization factors expressed in DALY/kg precursor emitted.
For land use, the selected model and indicator builds on species richness, incorporates the local effect of different land uses on biodiversity, links land use to species loss, includes the relative scarcity of affected ecosystems, and includes the threat level of species. Global average characterization factors (CFs) are interim recommended to quantify potential species loss (PSL) from land use and land use change, suitable for hotspot analysis in LCA. These CFs are not valid for comparative assertions. Developments are required before upgrading this interim recommendation to a full recommendation of CFs, including the refinement of land use classes, the inclusion of additional taxa, and the test of CFs in sufficient case studies.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Norwegian University of Science and Technology, University of Michigan, University of California at Berkeley, Institut de Recerca i Tecnologia Agroalimentàries, Ecole Polytechnique de Montreal, treeze Ltd.
Authors: Jolliet, O. (Ekstern), Fantke, P. (Intern), McKone, T. E. (Ekstern), Anton, A. (Ekstern), Michelsen, O. (Ekstern), Stylianou, K. S. (Ekstern), Boulay, A. (Ekstern), Frischknecht, R. (Ekstern)
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Main Research Area: Technical/natural sciences
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Good Practice and Success Stories on Energy Efficiency in China
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State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, Energy Research Institute, Tsinghua University
Authors: Zhu, X. (ed.) (Intern), Bai, Q. (Ekstern), Zhang, X. (Ekstern)
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Governing Transformation towards Low-carbon Societies: An ideational perspective from developing countries

Securing a low-carbon future will require a multitude of 'low-carbon transformations'. The issues are how such transformations are imagined and framed, along which pathways and who steers them, including the very basic question of what decisions are made to transform the present challenges to climate change governance. Understanding of the politics of these governance challenges is important in explaining which pathways are supported or delegitimised and which are ignored and fail to get off the ground. This dissertation focuses on the role of institutions and ideas in the multilevel, multi-actor and multi-factor governance of climate-compatible development. It aims to improve our understanding of potential endogenous sources of transformation by asking how ideas of sustainability influence the governance of a low-carbon society. It investigates the construction of policy problems, the content of policy proposals and the political agenda of present policies and reform imperatives around climate change mitigation and lowcarbon development. The question is addressed using a combination of perspectives, including governance theory and the constructivist institutional approach.

Empirically, this dissertation is based on four separate case studies presented in individual articles. The study of voluntary carbon market mitigation projects in the Sub-Saharan region maps out the market actors and their conceptualisations of sustainability to highlight the ideas behind market-based solutions to climate change mitigation. In examining national climate change mitigation and green growth strategies in Vietnam, it was demonstrated how the current institutional context relates to the background to long-term transformation and programmatic ideas about how to achieve it. In the study of baseline setting in developing Nationally Appropriate Mitigation Actions (NAMAs) in the building sector in Vietnam, the role of international knowledge practices in national policy-making was questioned. Finally, the examination of electricity infrastructure development showed how reforms to low-carbon energy systems are justified in two different sociotechnological settings: Mexico and Vietnam.

On the one hand, the findings indicated that over time, by invoking and appealing to arguments associated with the ideas and principles of neoliberalism climate change mitigation and low-carbon development, agendas have become more acceptable in the justification of sectoral policies. On the other hand, the analysis shows how policy experts and technocrats use their epistemic power and ideational abilities to limit the scope of debate, thus constraining the range of policy responses. When there are no fundamental transformational shifts in the background and in programmatic ideas about development, the actors that frame the institutional context within a prevailing framework further legitimise conservative ideas about climate governance. For instance, solutions normalising the temporal necessity of fossil fuels in electricity generation while justifying economic growth by means of green growth arguments become more deeply embedded in development trajectories. Narrow conceptualisations of policy problems and solutions in the cases presented here have resulted in incumbent actors resorting to quite conventional instruments of technological market-based fixes in the absence of alternative and/or more transformational visions of development.

Overall, this dissertation contributes to on-going debates over domestic politics and policy-making regarding 'green transformations' and adds to the emerging policy field in developing countries contexts. It argues that there is a need to stimulate critical reflection on the existing assumptions regarding mitigation actions. It argues that governance choices, for example, in electricity infrastructure development or energy efficiency in buildings, or a broader range of mitigation actions, are not only defined by technological lockins. Equally important is the persistence of ideas that are used to justify and legitimise reforms by mobilising discourses on energy supply and security and framing energy transitions as part of wider goals to maintain socio-economic stability and pursue green growth development strategies. This dissertation shows that low-carbon development should not only be technically, institutionally and economically feasible, but also politically and ideationally feasible, to translate into action. Measures for institutionalising long-term transformation are unlikely to be effective if ideas about transformation cannot be developed within the parameters set by governance regimes.

The key argument of this dissertation is that, for the governance of low-carbon societies, it is crucial to recognise that climate change mitigation actions are not only more than economic or technological challenges – they are politically charged. Paying attention to problem framings and to the diversity of multi-actor perspectives could facilitate novel responses to climate change and enable more inclusive forms of governance, as well as throwing light on the fundamental incompatibility between and limited reach of generalised policy solutions and technological fixes.
Relations
Projects:
Governing Transformation towards Low-carbon Societies: An ideational perspective from developing countries
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Green Cohesive Agricultural Resource Management - The WEBSOC Project

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Green Decision Making: How Systemic Planning can support Strategic Decision Making for Sustainable Transport Development

The book is based on my participation in the SUSTAIN research project 2012-2017 about National Sustainable Transport Planning funded by the Danish Research Council (Innovationsfonden). Many of the issues treated here have a backdrop in my book Complex Strategic Choices – Applying Systemic Planning for Strategic Management. The book was published in 2012 by Springer-Verlag, London, as a research monograph in the publisher’s series about Decision Engineering. The intention behind this new book – with its focus upon ‘greening’ of strategic decisions – is to provide a general and less technical description of the possibilities that a systemic approach to complex planning problems seems to offer. As will appear, the presentation of systemic planning (SP) below is primarily based on applying SP to transport infrastructure investments. However, SP in its process and methodological outline should not be seen as restricted to this application area. In fact a company relocation decision case has been used to introduce the potential of SP as regards providing decision support for strategic decision making. A main concern in this presentation of SP, which deviates from the Springer book referred to above, is to highlight that ‘greening’ of decision making is not an ‘add-on’ activity. More likely it is a possibility that arises by basing complex strategic choices on decision support knowledge established by conducting and combining specific types of examination related to the actual complex decision problem, typically of strategic nature.

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Organisations: Department of Management Engineering, Management Science, Operations Management
Authors: Leleur, S. (Intern)
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Green Decision Making: Sustainable Transport and Systemic Planning (SP)
The generic framework for planning and decision support set out in this paper is the outcome of the research work carried out in recent years in the international research project SUSTAIN concerning national sustainable transport planning. In the paper focus is on sustainable transport and infrastructure assessment and on the methodology and process of systemic planning (SP).

SP theory development has interchanged with practical application and testing of the SP approach in a large number of cases. The word systemic in SP indicates that complex planning problems and provision of decision support in today’s strategic planning needs a focus on what may be addressed as systemic insights in balance with more conventional, systematically-based findings where causal linkages can be modelled and made use of. In practice this means that SP is based on a study-specific combination of hard (quantitative) and soft (qualitative) operations research (OR) methods; especially the latter have a function as regards knowledge generation that relates to obtaining systemic insights. Furthermore, SP applies a process that drives group-based learning forward. The group should be formed with the different stakeholder interests as regards the outcome represented by different group members. The process is guided by a facilitator and is assisted by an analyst, with the analyst providing ongoing, interactive modelling. This collective (man/machine) learning aims to lead to a final decision (or decision recommendation) about the best alternative or course of action for the actual strategic planning problem. The flexibility of SP makes it adaptable to different problem types. The paper is disposed as follows: After the Introduction about green decision making, Section 2 presents five SP-perspectives, where each perspective is grounded in a particular research approach that serves a particular function in the SP framework. The following Section 3 describes the SP modelling toolbox consisting of 2 x 7 soft and hard OR methods. Based on the previous sections, Section 4 describes the ‘SP-wheel’, which is the process-driver behind an iterative group-based learning cycle, intended to provide decision support for the actual decision making. The SP-wheel consists of 8 steps which produce knowledge that is intended to accumulate as final decision support. In the following Section 5 findings from a number of conducted case studies are applied to illuminate various aspects of the individual steps in the SP-wheel. A final Section 6 presents findings and perspective.

A more comprehensive treatment of the SP framework presented in the paper and the ideas behind the framework is available as a free E-book download from the author’s ResearchGate page: https://www.researchgate.net/profile/Steen_Leleur GREEN DECISION MAKING – How Systemic Planning can support Strategic Decision Making for Sustainable Transport Development, Tech. Univ. of Denmark, Department of Management Engineering, April 2017.

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Authors: Leleur, S. (Intern)
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Har kørebanens bredde betydning for trafikanters adfærd?
En ny undersøgelse fra Tyskland viser, at bredden af venstre kørebane på motorvejsstrækninger med vejarbejde har betydning for trafikanternes adfærd. Jo smallere kørebanen er, jo langsommere kører trafikanterne og jo længere trækker de til højre. Det har dog samtidig den negative sideeffekt, at antallet af kollisioner mellem trafikanter i venstre og højre kørebane stiger.

General information
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Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern)
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Publication information
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Links:
Publication: Communication › Newspaper article – Annual report year: 2017
Harmonisering af retningslinjer vedrørende vejarbejde
Effektiv regulering af kørehastigheden er et vigtigt element for øget sikkerhed i forbindelse med vejarbejde. I et projekt med deltagelse fra flere europæiske lande har man lavet et overblik over anvendte virkemidler samt en vurdering af deres potentielle med hensyn til at kunne bidrage til at reducere kørehastigheden i forbindelse med vejarbejde. Projektet er tænkt som et første skridt i retning mod harmonisering af retningslinjer for hastighedsregulering ved vejarbejde inden for Europa.

General information
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Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern)
Publication date: 2017

Harmonizing human exposure and toxicity characterization
The UNEP-SETAC Life Cycle Initiative has launched a project to provide global guidance and build consensus on environmental life cycle impact assessment (LCIA) indicators. Human health effects from exposure to toxic chemicals was selected as impact category due to high relevance of human toxicity impacts, past and present efforts in human toxicity assessment, and the need for further harmonization and global guidance. To address this need, an expert workshop was implemented in Utrecht in October 2016 with the aim of building a roadmap for a reliable and consistent approach for improving and harmonizing human toxicity characterization in LCIA. Building on initial work for the far-field and indoor air environments, and combining it with latest work on near-field consumer and occupational exposure assessment, dose-response and severity data, we aim at providing revised guidance on the development and use of impact factors for toxic chemicals. We propose to couple fate processes in consumer and occupational environments with existing environmental compartments and processes via a consistent and mass balance-based set of transfer fractions to quantify overall aggregated exposure to toxic substances. We propose the product intake fraction (PiF) as metric linking human intake via all exposure routes to substance mass in products. Further, for fine particulate matter, a constructed integrated exposure-response model has recently been proposed and applied to calculate marginal and average health impacts, which will serve as starting point for improving toxicity dose-response. To go beyond the additivity and linearity assumptions and to address essentiality and vulnerability, we propose to account for the fraction of population that is above a certain risk threshold for the considered disease/mode of action. We finally propose to explore the possibility to expand the endpoint coverage beyond cancer and non-cancer and to differentiate between other relevant health effects. For attributing severity to mortality (and morbidity) for cancer and non-cancer diseases to damage metrics, we will need to identify severity weights for population disease incidences expressed as disability-adjusted life years (DALY). All aspects for fate and exposure outdoors, consumer and occupational exposure, toxicity effects and dose-response, and cross-cutting issues are currently being further detailed aiming at arriving at recommended factors and global guidance within the next two years.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Michigan, University of California
Authors: Fantke, P. (Intern), Jolliet, O. (Ekstern), McKone, T. (Ekstern)
Publication date: 2017
Harnessing big data for estimating the energy consumption and driving range of electric vehicles

Analyzing the factors that affect the energy efficiency of vehicles is crucial to the overall improvement of the environmental efficiency of the transport sector, one of the top polluting sectors at the global level. This study analyses the energy consumption rate (ECR) and driving range of battery electric vehicles (BEVs) and provides insight into the factors that affect their energy consumption by harnessing big data from real-world driving. The analysis relied on four data sources: (i) driving patterns collected from 741 drivers over a two-year period; (ii) drivers’ characteristics; (iii) road type; (iv) weather conditions. The results of the analysis measure the mean ECR of BEVs at 0.183 kW h/km, underline a 34% increase in ECR and a 25% decrease in driving range in the winter with respect to the summer, and suggest the electricity tariff for BEVs to be cost efficient with respect to conventional ones. Moreover, the results of the analysis show that driving speed, acceleration and temperature have non-linear effects on the ECR, while season and precipitation level have a strong linear effect. The econometric model of the ECR of BEVs suggests that the optimal driving speed is between 45 and 56 km/h and the ideal temperature from an energy efficiency perspective is 14 °C. Clearly, the performance of BEVs highly depends on the driving environment, the driving patterns, and the weather conditions, and the findings from this study enlighten the consumers to be more informed and manufacturers to be more aware about the actual utilization of BEVs.

General information
State: Published
Organisations: Department of Management Engineering, Transport Modelling, Transport DTU, University of Queensland
Authors: Fetene, G. M. (Intern), Kaplan, S. (Intern), Mabit, S. L. (Intern), Jensen, A. F. (Intern), Prato, C. G. (Ekstern)
Pages: 1-11
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
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Scopus rating (2016): CiteScore 3.08 SJR 1.195 SNIP 1.573
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.143 SNIP 1.379 CiteScore 2.65
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.427 SNIP 1.953 CiteScore 2.49
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.213 SNIP 1.663 CiteScore 2.08
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.061 SNIP 1.705 CiteScore 2
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.962 SNIP 1.72 CiteScore 1.86
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.732 SNIP 1.317
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.835 SNIP 1.453
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.041 SNIP 1.326
Heavy metals concentration and distribution in soils and vegetation at Korle Lagoon area in Accra, Ghana

The call for reclamation of land around Korle Lagoon in Accra, Ghana, where burning of E-waste and cultivation of vegetables takes place, make risk assessment of heavy metal contaminations important. This study aimed at evaluating the levels and risk of heavy metal contamination in soils and vegetation around the Korle lagoon area in Accra. Geoaccumulation index, enrichment factor and pollution load index were determined to assess the risk of contamination. The levels and distribution of nine heavy metals (Pb, Hg, Cd, As, Zn, Sn, Ni, Cu and Cr) in soil (0 – 20 cm) and common vegetation (Panicum maximum, Imperata cylindrica, Lactuca sativa and Hibiscus sabdariffa) from the area using Atomic Absorption Spectrometer (AAS) were assessed. The area was divided into five sites namely; the e-waste site (S1), gardens area (S2), recreational area (S3), reclaimed area (S4) estuary (S5), and the control (S6) which was about 700 m away. Soil analysis showed that the concentration of Pb (184.44 mg/kg), Cd (103.66 mg/kg), Cu (202.99 mg/kg), Ni (72.00 mg/kg) and Sn (705.32 mg/kg) at S1 exceeded their WHO/FAO thresholds for agricultural soils. Concentrations of heavy metals in soils from the e-waste site was significantly different (p < 0.01) from the other sites. High accumulations of heavy metals were also observed in the plants samples collected from the study sites, with the concentrations of Cu, Pb, Ni and Cd exceeding their acceptable limits. Laws against open burning of e-waste should be enforced and animals should be restricted from grazing on the forage.

General information

State: Accepted/In press
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Ghana
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information

Journal: Cogent Environmental Science
Volume: 0
Issue number: 0
ISSN (Print): 2331-1843
Original language: English
Heavy metals, E-waste, Pollution, Environment, Health risks
Electronic versions:
Heavy_metals_concentration_and_distribution_in_soils_and_vegetation_at_Korle_Lagoon_area_in_Accra_Ghana.pdf
DOIs:
10.1080/23311843.2017.1405887

Bibliographical note
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Source: FindIt
Source-ID: 2393568956
Publication: Research - peer-review › Journal article – Annual report year: 2017

Helbredstjek af dansk sundhedsteknologi: Sektorudviklingsrapport

Sådan kan samarbejde mellem industrien, universiteterne og sundhedsvæsenet skabe gode løsninger til forebyggelse, diagnostik, patientbehandling og rehabilitering
High Speed Rail: Implications for carbon emissions and biodiversity

Rail has traditionally been seen as ‘good’ for the environment, as it is fast and efficient with a low carbon footprint. With respect to HS2 in the UK, new environmental debates have arisen over the competing global objectives of reducing the carbon footprint of HSR and the need to maintain and enhance local biodiversity and habitat. This paper identifies, measures and comments on the longer term environmental consequences of major infrastructure decisions that have to be made today. Short term pragmatism is seen as the means by which these decisions are made, and this results in issues relating to the complexity and uncertainty in assessing future impacts being relegated to a secondary level of importance. Mitigation measures (and not alternative routes) are discussed, and the legacy value of HSR to future generations is based on notions of short term mobility and economic growth, and not on the lower levels of carbon emissions and biodiversity loss.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Operations Management, Transport DTU, University of Oxford
Authors: Cornet, Y. (Intern), Dudley, G. (Ekstern), Banister, D. (Ekstern)
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication Information
Journal: Case Studies on Transport Policy
ISSN (Print): 2213-6258
Ratings:
Web of Science (2018): Indexed yes
Scopus rating (2016): CiteScore 1.21 SJR 0.536 SNIP 0.806
Scopus rating (2015): SJR 0.378 SNIP 0.633 CiteScore 0.92
Scopus rating (2014): SJR 0.115 SNIP 0.045 CiteScore 0.14
Original language: English
DOIs:
10.1016/j.cstp.2017.08.007
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Source-ID: 2373370264
Publication: Research - peer-review › Journal article – Annual report year: 2017

High-throughput migration modelling for estimating exposure to chemicals in food packaging in screening and prioritization tools

Specialty software and simplified models are often used to estimate migration of potentially toxic chemicals from packaging into food. Current models, however, are not suitable for emerging applications in decision-support tools, e.g. in Life Cycle Assessment and risk-based screening and prioritization, which require rapid computation of accurate estimates for diverse scenarios. To fulfil this need, we develop an accurate and rapid (high-throughput) model that estimates the fraction of organic chemicals migrating from polymeric packaging materials into foods. Several hundred step-wise simulations optimised the model coefficients to cover a range of user-defined scenarios (e.g. temperature). The developed model, operationalised in a spreadsheet for future dissemination, nearly instantaneously estimates chemical migration, and has improved performance over commonly used model simplifications. When using measured diffusion coefficients the model accurately predicted (R² = 0.9, standard error (Se) = 0.5) hundreds of empirical data points for various scenarios. Diffusion coefficient modelling, which determines the speed of chemical transfer from package to food, was a major contributor to uncertainty and dramatically decreased model performance (R² = 0.4, Se = 1). In all, this study provides a rapid migration modelling approach to estimate exposure to chemicals in food packaging for emerging screening and prioritization approaches.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Michigan
Authors: Ernstoff, A. S. (Intern), Fantke, P. (Intern), Huang, L. (Ekstern), Jolliet, O. (Ekstern)
Pages: 428-438
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication Information
Journal: Food and Chemical Toxicology
Volume: 109
Issue number: 1
ISSN (Print): 0278-6915
Ratings:
BFI (2018): BFI-level 1
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Scopus rating (2016): CiteScore 3.96 SJR 1.322 SNIP 1.589
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.213 SNIP 1.426 CiteScore 3.44
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.042 SNIP 1.381 CiteScore 3.12
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.013 SNIP 1.52 CiteScore 3.26
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.135 SNIP 1.745 CiteScore 3.52
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.12 SNIP 1.593 CiteScore 3.36
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.921 SNIP 1.216
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.818 SNIP 1.049
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.778 SNIP 1.133
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.798 SNIP 1.432
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.871 SNIP 1.374
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.935 SNIP 1.191
Scopus rating (2004): SJR 0.865 SNIP 1.209
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.679 SNIP 1.034
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.613 SNIP 1.12
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.573 SNIP 1
Scopus rating (2000): SJR 0.506 SNIP 0.89
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.491 SNIP 0.964
Original language: English
Exposure modelling, Food contact materials, Life cycle assessment, Low-tier, Product intake fraction, Risk
DOIs:
10.1016/j.fct.2017.09.024
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Source-ID: 2389678732
Home-end and activity-end preferences for access to and egress from train stations in the Copenhagen region

Increasing public transport use with the aim of improving the sustainability of cities should focus not only on enhancing level and quality of the service offered, but also on understanding determinants of the choice of access and egress modes to and from the railway network. This study analyzes the difference in preferences at the home-end and activity-end for travelers who have chosen train as their main travel mode while investigating the effect of policy variables such as car parking availability, bicycle parking availability and type, and bicycle on train possibility. Specifically, this study analyzes the choices between five transport modes (i.e., "walk," "bicycle," "car driver," "car passenger," "bus") for 2921 home-end and 3658 activity-end trips. Joint mixed logit models are specified and estimated to account for heteroscedasticity and correlation across alternative modes as well as taste heterogeneity across travelers. Model estimates and pseudo-elasticities uncover the importance of travel time and underline how the improvement of walkability, bikeability, and bus service would contribute significantly to the increase in the probability of choosing sustainable modes to and from train stations. Moreover, model results emphasize the role of bicycle parking in terms of the sheer number of spaces to be increased as well as covered places to be offered at the activity end, de facto giving the possibility to leave a bicycle at that end during the night. Lastly, model results show that it is a matter of not only time and trip characteristics, but also traveler characteristics, occupation, and purpose.

General information
State: Published
Organisations: Department of Transport, Department of Management Engineering, University of Queensland
Authors: Halldórsdóttir, K. (Intern), Nielsen, O. A. (Intern), Prato, C. G. (Intern)
Number of pages: 11
Pages: 1-11
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: International Journal of Sustainable Transportation
Volume: 0
Issue number: 0
ISSN (Print): 1556-8318
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 1.91 SJR 0.957 SNIP 1.419
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.341 SNIP 2.269 CiteScore 2.94
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.192 SNIP 1.782 CiteScore 2.45
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.509 SNIP 1.5 CiteScore 1.43
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.002 SNIP 1.265 CiteScore 1.49
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.558 SNIP 0.445 CiteScore 0.98
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.288 SNIP 0.495
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.101 SNIP 0
BFI (2008): BFI-level 1
Households' hourly electricity consumption and peak demand in Denmark

The electrification of residential energy demand for heating and transportation is expected to increase peak load and require additional generation and transmission capacities. Electrification also provides an opportunity to increase demand response. With a focus on household electricity consumption, we analyse the contribution of appliances and new services, such as individual heat pumps and electric vehicles, to peak consumption and the need for demand response incentives to reduce the peak. Initially, the paper presents a new model that represents the hourly electricity consumption profile of households in Denmark. The model considers hourly consumption profiles for different household appliances and their contribution to annual household electricity consumption. When applying the model to an official scenario for annual electricity consumption, assuming non-flexible consumption due to a considerable introduction of electric vehicles and individual heat pumps, household consumption is expected to increase considerably, especially peak hour consumption is expected to increase. Next the paper presents results from a new experiment where household customers are given economic and/or environmental incentives to shift consumption to or away from specified hours. The experiment focuses on the present classic consumption and shows that household customers do react to incentives, but today the flexibility of the classic consumption is limited. Considering electric vehicles and individual heat pumps, for an individual household, the consumption of each of these technologies roughly doubles the household's consumption and considerably increases their potential for flexibility. Thus, in order to introduce incentives for demand flexibility, while considering reducing peak consumption, policy makers should initially focus on households that have a heat pump and/or an electric vehicle.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, University of Copenhagen, Københavns Universitet
Authors: Møller Andersen, F. (Intern), Baldini, M. (Intern), Hansen, L. G. (Forskerdatabase), Jensen, C. L. (Ekstern)
Pages: 607-619
Publication date: 2017
Main Research Area: Technical/natural sciences

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Journal: Applied Energy
Volume: 208
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
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Scopus rating (2016): CiteScore 7.78 SJR 3.058 SNIP 2.573
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.912 SNIP 2.61 CiteScore 6.4
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 3.254 SNIP 3.28 CiteScore 6.93
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 3.164 SNIP 3.377 CiteScore 6.59
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.854 SNIP 3.108 CiteScore 5.69
How can we stimulate and exploit a market in Africa for small wind turbines

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Nygaard, I. (Intern)
Publication date: 2017

Publication information
Media of output: Power Point Presentation
Size: 15
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
wind_energy_denmark_Ivan_Nygaard_3.pdf

Bibliographical note
Presentation at the conference Wind Energy Denmark, Herning, Denmark, 2 October 2017
How can you work with shared space in a municipality?

**General information**
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Brinkø, R. (Intern)
Pages: 23-27
Publication date: 2017
Main Research Area: Technical/natural sciences

**Publication information**
Journal: EuroFM Insight
Volume: 40
ISSN (Print): 1993-1980

How Daily Operational Meetings Can Support Transformation To A Lean Improvement Culture
With pressure for creating more value with fewer resources, many organizations pursue becoming Lean. However, many are unsuccessful in the transformation necessary for sustainable change, such as creating an improvement culture. This study investigates how operational meetings, offering frequent touch points, can be used to intentionally support cultural transformation. An explorative case study identified more than 30 types of meeting activities in five categories: Information, Action, Sparring, Learning, and Relational. A comparative case study then investigated meeting set-ups and their role in supporting cultural change. The analysis shows how meeting set-ups can be designed to support cultural transformation.

**General information**
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, David Hansen Xpertise, Mid Sweden University
Authors: Hansen, D. (Ekstern), Jørgensen, R. (Intern), Lilja, J. (Ekstern)
Number of pages: 10
Publication date: 2017

How does the long-term aging in the soil change terrestrial ecotoxic impacts of anthropogenic metal emissions?

**General information**
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Copenhagen
Authors: Ow siaiak, M. (Intern), Holm, P. E. (Ekstern), Fantke, P. (Intern), Christiansen, K. S. (Ekstern), Borggaard, O. (Ekstern), Hauschild, M. Z. (Intern)
Number of pages: 1
Publication date: 2017
How indicative is a self-reported driving behaviour profile of police registered traffic law offences?

Although most motorised countries have experienced massive improvements in road safety over the last decades, human behaviour and differences in accident risk across sub-groups of drivers remains a key issue in the area of road safety. The identification of risk groups requires the identification of reliable predictors of safe or unsafe driving behaviour. Given this background, the aim of this study was to test whether driver sub-groups identified based on self-reported driving behaviour and skill differed in registered traffic law offences and accidents, and whether group membership was predictive of having traffic law offences. Sub-groups of drivers were identified based on the Driver Behaviour Questionnaire (DBQ) and the Driver Skill Inventory (DSI), while traffic offences and accidents were register-based (Statistics Denmark). The participants (N = 3683) were aged 18–84 years and randomly selected from the Danish Driving License Register. Results show that the driver sub-groups differed significantly in registered traffic offences but not in registered accidents. In a logistic regression analysis, the sub-group "Violating unsafe drivers" was found predictive of having a traffic offence, even when socio-demographic variables and exposure were controlled for. The most important predictive factor, however, was having a criminal record for non-traffic offences, while gender, living without a partner, and being self-employed also had a significant effect. The study confirms the use of the DBQ and DSI as suitable instruments for predicting traffic offences while also confirming previous results on accumulation of problematic behaviours across life contexts. The finding that driver sub-groups did not differ in registered accidents supports the recent research activities in finding and modelling surrogate safety measures.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU, Transport Modelling, University of Queensland
Authors: Martinussen, L. M. (Intern), Møller, M. (Intern), Prato, C. G. (Intern), Haustein, S. (Intern)
Pages: 1-5
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Accident Analysis & Prevention
Volume: 99
ISSN (Print): 0001-4575
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.24 SJR 1.49 SNIP 1.97
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.206 SNIP 1.808 CiteScore 2.63
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.19 SNIP 2.067 CiteScore 2.79
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.359 SNIP 2.688 CiteScore 3.2
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.3 SNIP 2.238 CiteScore 2.56
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.922 SNIP 2.008 CiteScore 2.61
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.146 SNIP 2.356
How is it going? Performance assessment in major projects

Determining the performance of a major project is a challenge for both practitioners and scholars. In the context of operational change projects the challenge is exacerbated by the service-intensive nature of the transformation, temporal disconnects between contracting and delivery and lack of appropriate metrics. This paper considers performance from a service delivery perspective. Current measures of performance were noted to be inadequate in practice. The service operations literature provided frameworks which were investigated for their utility and supplemented by qualitative data to generate an enhanced service performance model. This was then tested using a survey and a structural equation model derived. Development of this yielded new classifications but most importantly, provided a more meaningful method for measuring the performance of operational transformation projects. Specifically, it is shown that expectations and perceptions are measured on different scales, and that quality performance is inseparable from other performance aspects. The contributions of this paper are to address an important practical problem but also to contribute to the development of the discussion of performance management in major projects from an OM perspective.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Cranfield University
Authors: Maylor, H. (Ekstern), Johnson, M. (Ekstern), Turner, N. (Ekstern), Geraldi, J. (Intern)
Number of pages: 23
Publication date: 2017
How Malaysian managers persuade employees' innovative behaviour?
The intention of this paper was to examine the impact of six selected leaders' behaviours on employees' innovative behaviour through the mediating role of leader-member exchange (LMX). A total number of 155 pairs of employees and their immediate managers participated in this study. Employees rated their managers' behaviours and managers evaluated their subordinates' innovative behaviour. Both managers and employees answered to LMX measurement. Then, the agreements of employees' and managers' LMX rating were applied based on the results of within and between analysis (WABA). The obtained data were analysed through structural equation modelling-partial least square (SEM-PLS). The findings revealed the significance of mediating role of LMX in relationship between behaviour of recognising, taking risks for change and paternalistic with employees' innovative behaviour. Thus, this study has contributed to the leadership literature in addition to providing a clear vision for Malaysian managers to increase employees' innovative behaviour via improving exchange relationship.

General information
State: Published
Organisations: Technology and Innovation Management, Department of Management Engineering, Copenhagen Business School, University of Malaya
Authors: Farid, H. (Intern), Hakimian, F. (Ekstern), Ismail, M. N. (Ekstern)
Pages: 291-307
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Main Research Area: Technical/natural sciences

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Journal: International Journal of Management and Enterprise Development
Volume: 16
Issue number: 4
ISSN (Print): 1741-8127
Ratings:
Scopus rating (2016): CiteScore 0.38 SNIP 0.21 SJR 0.19
Scopus rating (2015): CiteScore 0.28 SNIP 0.185 SJR 0.217
Scopus rating (2014): CiteScore 0.3 SNIP 0.149 SJR 0.215
Scopus rating (2013): CiteScore 0.36 SNIP 0.366 SJR 0.289
Scopus rating (2012): CiteScore 0.3 SNIP 0.131 SJR 0.197
Scopus rating (2011): CiteScore 0.52 SNIP 0.457 SJR 0.246
Scopus rating (2010): SNIP 0.374 SJR 0.256
Scopus rating (2009): SNIP 0.766 SJR 0.611
Scopus rating (2008): SNIP 1.332 SJR 1.512
Scopus rating (2007): SNIP 1.195 SJR 0.491
Scopus rating (2006): SNIP 1.545 SJR 0.591
Scopus rating (2005): SNIP 0.07 SJR 0.282
Scopus rating (2004): SNIP 0 SJR 0.195
Original language: English
Business and International Management, Management Science and Operations Research, Employees' innovative behaviour, Leader-member exchange, Leaders' behaviour, Paternalistic leadership, Recognising behaviour, Taking risk behaviour, Within and between analysis
DOIs:
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Source: FindIt
Source-ID: 2391122473
Publication: Research - peer-review › Journal article – Annual report year: 2017

How many EMA-workshops are needed to collect a representative sample of events in a hospital ward?
The effect modifier assessment (EMA) method (Edwards & Winkel, 2016) is a method for assessing the impact of an intervention and modifiers on a desired outcome e.g. improved work environment. The EMA-method captures events (a change in work) in a ward and for each event assesses 1) impact on work environment and 2) if the event was part of the intervention or not. The EMA-method rely on the EMA-workshop – a structured group interview method inspired by the chronicle workshop (Limborg & Hvenegaard, 2011) to collect data. However, healthcare organizations are complex and
staff carry out many different and diverse tasks. This poses a problem when using the EMA-method and raises the research question of this abstract: How many EMA-workshops are needed to generate a representative collection of events in a ward? Methods Six EMA-workshops each with a full surgical team of six people was conducted in a heart surgery ward with 150 employees (Edwards & Teewes, 2015). The collected events from all workshops was analyzed and grouped into themes. Data was considered representative when the next workshop did not produce any new themes (saturation). Results In the test case, most if not all employees focused on surgery. The ward was organized in three specialties: Heart surgery, Lung surgery and Child heart surgery. Events differed between specialties and therefor it was expected that saturation would be reached after minimum three workshops. The heart center is comparable to other surgical units and will exhibit a lower degree of variation in work tasks and processes than a medical ward. The general recommendation is that each EMA-workshop include participants from all relevant occupational groups for a specialization. A specialization should be understood broadly as they may not be formally defined but have developed over time e.g. a specific patient group. The number of needed EMA-workshops depend on the number of specializations and researchers should uncover the extent and number of specializations before deciding the number of workshops. The number of EMA-workshops is recommended to be at least equal to the number of specialties relevant to the study.

General information
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Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Edwards, K. (Intern)
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Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

How the reverse supply chain contributes to a firm’s competitive strategy: a strategic alignment perspective
The ongoing transition to a Circular Economy is changing the shape of Supply Chains. They are becoming more ‘Closed-Loop’, combining forward and reverse flows of products and materials. Reverse Supply Chains (RSCs), originally considered as a solution for handling waste or recovering residual value, can play a pivotal role in determining the competitive advantage of the firm. Firms do not always exploit the potential of the RSC, and the conditions allowing the exploitation remain unclear. This paper explores the alignment between the RSC and the competitive strategy of the firm. Results from seven case studies, focusing on original equipment manufacturers (OEMs), show how the RSC can play a strategic, tactical, or operational role for the firm. The paper applies for the first time the concept of strategic alignment to the RSC and practitioners can use the proposed framework to analyse the role of the RSC within their firm.

General information
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Organisations: Center for Bachelor of Engineering Studies, Afdelingen for Produktionsudvikling, Operations Management, Department of Management Engineering, Management Science, Transport DTU, University of Warwick
Authors: Larsen, S. B. (Intern), Masi, D. (Ekstern), Jacobsen, P. (Intern), Godsell, J. (Ekstern)
Publication date: 2017
Main Research Area: Technical/natural sciences

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Journal: Production Planning & Control
ISSN (Print): 0953-7287
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.45 SJR 1.073 SNIP 1.226
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.127 SNIP 1.252 CiteScore 2.23
How the reverse supply chain impacts the financial performance of original equipment manufacturers

This thesis examines the financial impact of a firm’s reverse supply chain (RSC). Specifically, the thesis examines the two questions of how the RSC can contribute to the financial performance of the firm and which factors are decisive for the RSC’s financial contribution. The thesis focuses on original equipment manufacturers. The thesis results show that the RSC can contribute to the financial performance of the firm in more than 20 different ways, which the thesis defines as functions of the RSC. Examples of RSC-functions are 1) resale of recovered end-products to price-focused market segments in the firm’s primary markets, 2) resale to customers in new markets (in e.g. emerging economies), and 3) sale of used materials back to the firm’s original material suppliers. The firm’s RSC can conduct several RSC-functions simultaneously and the financial benefits from operating these RSC-functions differ widely among functions. The factors that are decisive for the RSC’s financial contribution depend on the type of RSC-function. For a RSC-function that recovers and resells end-products examples of factors decisive the function’s financial contribution are 1) the market’s willingness to pay for recovered products, 2) the firm’s profits from servicing recovered products once sold, and 3) the added probability of selling additional products to customers of recovered products. The thesis demonstrates that manufacturers can achieve considerable financial contributions from the RSC, which contracts the traditional perception of the RSC in academic literature as well as with logistics practitioners.

General information
State: Published
Organisations: Center for Bachelor of Engineering Studies, Afdelingen for Produktionsudvikling, Department of Management Engineering, Operations Management, Management Science, Transport DTU
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Number of pages: 65
Publication date: 2017

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems
Authors: Geraldi, J. (Intern), Thuesen, C. (Intern), Oehmen, J. (Intern), Stingl, V. (Intern)
Number of pages: 162
Publication date: 2017

How to foster a High-Tech entrepreneurial mind-set – A multidisciplinary engineering course for Bachelor students

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Statistics and Data Analysis, Department of Micro- and Nanotechnology, National Food Institute, Research Group for Microbial Biotechnology and Biorefining, Office for Study Programmes and Student Affairs, Department of Civil Engineering, Department of Management Engineering, Technology and Innovation Management
Authors: Rootzén, H. (Intern), Berg, R. H. (Intern), Hobley, T. J. (Intern), Andersson, P. H. (Intern), Yoshinaka, Y. (Intern), Jensen, L. B. (Intern)
Publication date: 2017
Main Research Area: Technical/natural sciences
Entrepreneurial mind-set, Multidisciplinary teams, Preparing professionals
Source: PublicationPreSubmission
Source-ID: 131137226
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017

How to Identify Possible Applications of Product Configuration Systems in Engineer-to-Order Companies

Product configuration systems (PCS) play an essential role when providing customised and engineered products efficiently. Literature in the field describes numerous strategies to develop PCS but neglects to identify different application areas. This topic is particularly important for engineer-to-order (ETO) companies that support gradual implementation of PCS due to large product variety and, several times, higher complexity of products and processes. The overall PCS process can thereby be broken down, and the risk minimised. This paper provides a three-step framework to identify different applications of PCS including the following steps: (1) identifying potential PCS, (2) aligning IT development, and (3) establishing an overview of PCS application. The study is supplemented by results from a case study in which the proposed framework was tested. The results from the testing confirm that the framework is applicable, as it leads to strategic and smart decisions regarding the implementation of PCS.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management, Department of Mechanical Engineering, Engineering Design and Product Development
Authors: Kristjansdottir, K. (Intern), Shafiee, S. (Intern), Hvam, L. (Intern)
How to use SVMAs to reduce the Carbon Pricing and Climate Finance Gap: numerical illustrations

A temporary gap is generated by the difference between the Social Value of Mitigation Activities (SVMA) and implementable carbon prices. A spectrum of options are available to handle this. These options encompass policy instruments that give different weights to ‘command and control’ measures and to economic incentives. We analyze here how to combine an explicit carbon price that rewards mitigation activities every year and a notional price embedded in devices that reward low carbon investments beforehand through lowering their risk-weighted capital costs. The latter option is essential in order to hedge against two uncertainties that adversely affect technologies having high capital costs1. The first relates to technologies which are at the beginning or mid-way of their experience curve. The second relates to the net signal launched by explicit carbon prices given the presence of noises that swamp it.

We first illustrate, based on five case studies, the equivalence curves between carbon prices and percentages of reduction of capital costs. We argue then that a notional price equated to the SVMA can maximize the economic efficiency of financial devices that reduce the capital costs of a low carbon project and we discuss the necessity of a world SVMA and of national SVMAs. We then introduce uncertainty in the analysis and show that contingent risks theoretically need carbon prices to grow to a level well beyond their political acceptability. Reducing the risk-weighted capital costs and rewarding upfront low-carbon investments at the present value of the SVMA is an efficient way of overcoming these barriers. Finally, we show, in the case of India, how to assess a national SVMA that includes the climate benefits and the development co-benefits of mitigation activities.

We then discuss how to articulate a World SVMA (paragraph 108 of the Paris Decision), national SVMAs and explicit carbon prices (in line with NDCs) to bridge the funding gap, tackle the ‘100G$ and +’ issue, and maximize the gains of cooperation around climate policies.

Human health no-effect levels of TiO2 nanoparticles as a function of their primary size

As engineered nanomaterials are increasingly introduced on the market into a broad range of commodities or nanoproducts, there is a need for operational, reliable tool, enabling to consistently assess the risks and impacts
associated with the releases of nanoparticles. The lack of a developed metric that accurately represents their toxic effects while capturing the influence of the most relevant physicochemical properties is one of the major impediments. Here, we investigate the relationships between the toxic responses of nano-sized and micro-sized particles in in vivo toxicological studies and their physicochemical properties. Our results for TiO₂ particles indicate statistically significant associations between the primary particle size and their toxicity responses for combined inhalation and ingestion exposure routes, although the numerical values should be considered with care due to the inability to encompass influences from other relevant physicochemical properties like surface coatings. These findings allow for expressing mass-based adverse effect levels as a continuous function of the primary size of particles. This meaningful, exploratory metric can thus be used for screening purposes and pave the way for reaching adaptive, robust risk assessments of nanomaterials, e.g. for setting up consistent threshold levels, as well as consistent life cycle assessments of nanoproducts. We provide examples of such applications.

General information
State: Published
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Number of pages: 15
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BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.74 SJR 0.485 SNIP 0.555
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.569 SNIP 0.689 CiteScore 1.97
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.663 SNIP 0.868 CiteScore 2.17
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.749 SNIP 1.013 CiteScore 2.54
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.855 SNIP 1.03 CiteScore 2.56
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.09 SNIP 1.44 CiteScore 3.52
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.966 SNIP 1.248
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.977 SNIP 1.053
Web of Science (2009): Indexed yes
Humidification of fresh produce: evaluating potential for reducing postharvest losses and environmental impacts of food supply chains

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Fabbri, S. (Intern), Olsen, S. I. (Intern), Owsianiak, M. (Intern)
Number of pages: 1
Publication date: 2017

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Title of host publication: Book of Abstracts, Sustain 2017
Publisher: Technical University of Denmark (DTU)
Article number: F-4
Main Research Area: Technical/natural sciences
Conference: Sustain 2017, Kgs. Lyngby, Denmark, 06/12/2017 - 06/12/2017
Electronic versions:
SustainAbstracts2017c.compressed_62.pdf
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

Hvad kan man gøre ved vejvrede?
Det er ikke kun bilisten selv, der kan have gavn af tiltag, der reducerer forekomsten af vejvrede i trafikken. Også passagerer og andre trafikanter vil nyde godt af det, hvis forekomsten af pludselige, voldsomme og aggressive reaktioner i trafikken reduceres. I denne artikel skitseres forskellige tiltag til forebyggelse af vejvrede blandt bilister. Forskningen tyder på, at tiltag kan reducere vejvrede, men der er endnu ikke grundlag for at udpege ét tiltag som det bedste.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
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Publication date: 2017

Publication information
Newspaper: Nyhedsbrevet trafiksikkerhedsforskning
No.: 38
Main Research Area: Technical/natural sciences
Links:
http://www.trafiksikkerhedsforskning.dtu.dk/arkiv/nr-38/hvad-kan-man-goere-ved-vejvrede
Publication: Communication › Newspaper article – Annual report year: 2017
Hvad sker der i FM forskningen
Der er fantastisk meget viden fra forskning i FM, der betyder at du kan skyde gennem, hvis du kender til den. Det tager lang tid, hvis du i stedet skal erfare det hele selv.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Nielsen, S. B. (Intern)
Pages: 20-21
Publication date: 2017
Main Research Area: Technical/natural sciences

Hvilke behov for støtte har ældre bilister, når de køre bil?
Den teknologiske udvikling har i de seneste år ført til udvikling af en række fører-støtte-systemer, der på forskellig måde kan hjælpe bilisten under kørslen. Det er muligt, at sådanne systemer også vil kunne være en hjælp for ældre bilister. En ny svensk undersøgelse viser, at systemer, der kan hjælpe ældre i situationer, hvor de er nødt til at dele deres opmærksomhed mellem forskellige trafikrelaterede ting, hjælpe dem under kørsel i tæt trafik, og som løbende kan give dem faktuel information fx om den aktuelle hastighedsgrense, er relevante.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern)
Publication date: 2017

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Main Research Area: Technical/natural sciences
Links:
http://www.trafiksikkerhedsforskning.dtu.dk/arkiv/nr-37/aeldre-bilisters-stoettebehov-under-koersel
Publication: Communication › Newspaper article – Annual report year: 2017

Hvordan kan man arbejde med shared space i kommuner?
At flere og flere over hele verden flytter fra landet og til byerne er efterhånden et ret velkendt fænomen, og de større bysamsfund kommer da også med mange

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Berg, R. B. (Intern)
Pages: 22-25
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Main Research Area: Technical/natural sciences

Publication information
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Hybrid choice model to disentangle the effect of awareness from attitudes: Application test of soft measures in medium size city

The need to reduce private vehicle use has led to the development of soft measures aimed at re-educating car users through information processes that raise their awareness about the benefits of environmentally friendly modes, encouraging them to voluntarily change their travel choice behaviour (level of services characteristics being equal). It has been observed that these measures can produce enduring changes, being the result of mindful decisions. It is important then to try and understand what contributes to shape individuals’ preferences in order to be able to define the best policy for fostering changes toward more pro-environmental modes. The objective of this work is to provide empirical evidence of the effect of awareness and individual attitudes on the switch from car driver to more sustainable modes such as Park and Ride. In particular we attempt to discriminate the effect of awareness due to the information provided in a Stated Preference experiment from the effect of individuals’ attitudes toward stress and social norms with respect to sustainable transport modes. The case study refers to the implementation of a Voluntary Travel Behaviour Change programme in Cagliari (Italy), carried out with the purpose of promoting the use of the light rail in Park and Ride mode. To account for all these effects in the choice between car and Park and Ride we estimate a Hybrid Choice Model where the discrete choice structure allows us to estimate the effect of awareness of environment and stress, while the latent structure allows us to estimate the effect of the latent effect of norms and attitudes toward environment and stress. The results from this case study show that the more people consider the information about stress useful, the more they tend to behave sustainably, suggesting the importance of reporting feedback about stress in the personalised travel plan to promote sustainable mobility. Interestingly, the information about pollution has instead less impact in shifting behaviour toward sustainable modes.

Identification of critical technology building blocks

In order to have a better base for decisions, R&D managers need to know what the critical areas of development are in relation to the technologies they develop, mature, and include in the portfolio. As most of the technologies in a company have the potential to have a significant impact on competition, the challenge is to know how to identify and prioritize the development tasks. If possible, an effective strategy can be defined. This article suggests a framework for identification and analysis of a product portfolio, with special emphasis on identifying critical technology building blocks based on reasoning about product properties. Current approaches lack such views, and by focusing on these, potential make or break decisions are better supported. It is suggested to adopt the proposed framework to clarify where in the portfolio the technology needs critical attention for the next development steps. The framework is based on methods and theories in literature. The analysis of the portfolio is carried out through the framework in three steps: by creating an overview of the portfolio encompassing product and technology, assessing the elements in the overview with assessment metrics, and using property chains to identify critical technology building blocks.
Identifying and Managing Engineering Design Requirements for Emerging Markets

In the last decade, emerging markets have become a significant force in the world economy. It has become increasingly important for global manufacturing companies to develop products for emerging markets, which appropriately address local needs and requirements. Therefore, it is necessary, especially for those companies originally from developed markets, to acquire an in-depth understanding of particular design requirements in emerging markets in order to adapt both company products and approaches in such contexts.

Prior studies on the identification and management of design requirements have predominantly been conducted in the context of developed countries and relatively affluent markets. Emerging markets are distinct from developed markets in terms of numerous contextual factors, e.g., regulatory environments and competitive landscapes. These factors influence the requirement identification and can lead to changes in design requirements. However, the influence of these factors have not been explicitly studied in the context of emerging markets. In addition, current studies on design requirements focus on user requirements, whereas requirements from other perspectives have received limited attention. There is a need for an overview of different perspectives in requirement identification for manufacturing companies and their corresponding assessments in the context of emerging markets.

Therefore, this research project is motivated to 1) investigate the process of identifying and managing design requirements for emerging markets, with the purpose of examining the challenges and gaps in developed-market companies’ current practice and; 2) support companies in identifying design requirements for emerging markets with an efficient approach. This research project has been performed as a close collaboration between academy and industry. Two empirical studies have been conducted with Danish and Chinese manufacturing companies employing survey and case study as research methods. These two studies demonstrate that for a developed-market company, to identify design requirements is more challenging for emerging markets than that for home markets. The key findings suggest that the process of identifying and managing design requirements, which usually apply to developed markets, should be adapted for emerging markets. In such adaptations, particular attention should be paid to 1) understanding competitions and regulations in target markets, 2) selecting appropriate sources to gather information, and 3) being flexible in reacting to the dynamic and complex
emerging-market context. Based on the findings, the Perspective-oriented Requirement Excellence toolkit has been developed to support companies with the preparation and planning of requirement identification, especially for unfamiliar markets. This toolkit provides a structured framework to organise design requirements, which supports the identification of gaps in the existing requirement set, and assists the communication of design requirements between different stakeholders. It also provides a systematic approach to plan the process for identifying design requirements, which improves the efficiency in terms of utilising expertise and allocating resources. The toolkit has been evaluated at a workshop, which demonstrates the value of this method in supporting a real case practice.

This project has been conducted as interdisciplinary research. It supplements with a theoretical contribution to requirement engineering and engineering design, which in this case is an advanced understanding of the perspectives considered in requirement identification, and co-evolution of design requirements and product development processes in emerging markets. It also contributes to innovation management with implications that support managers in planning process, and allocating resources to identifying and managing design requirements in product development projects that target at emerging markets.

General information
State: Published
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Authors: Li, X. (Intern), Ahmed-Kristensen, S. (Intern), Li-Ying, J. (Intern), Daalhuizen, J. (Intern)
Number of pages: 341
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Main Research Area: Technical/natural sciences
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Projects:
Identifying and Managing Engineering Design Requirements for Emerging Markets
Publication: Research › Ph.D. thesis – Annual report year: 2017

Identifying product development crises: The potential of adaptive heuristics
This paper introduces adaptive heuristics as a tool to identify crises in design projects and highlights potential applications of these heuristics as decision support tool for crisis identification. Crises may emerge slowly or suddenly, and often have ambiguous signals. Thus the identification of a project crisis is often difficult. Yet, to allow fast crisis response, timely identification is critical for successful crisis management. Adaptive heuristics are judgement strategies that can strive in circumstances of limited and ambiguous information. This article presents a theoretical proposition for the application of heuristics in design sciences. To achieve this, the paper compares crises to ‘business as usual’, and presents sixteen indicators for emerging crises. These indicators are potential cues for adaptive heuristics. Specifically three adaptive heuristics, One-single-cue, Fast-and-Frugal-Trees, and Tallying, are well suited to support design practitioners to make robust inferences about the situation. The paper presents potential applications of these three heuristics and provides an outlook on further research on adaptive heuristics in design sciences.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems
Authors: Münzberger, C. (Ekstern), Stingl, V. (Intern), Oehmen, J. (Intern), Geraldi, J. (Intern)
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Publisher: Design Society
Main Research Area: Technical/natural sciences
Conference: ICED17: 21st International Conference on Engineering Design, Vancouver, Canada, 21/08/2017 - 21/08/2017
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DS87_Vol2_DesProc_DesOrg_68.pdf
Links:
If bio-based plastics is the answer, what was the question?

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Hauschild, M. Z. (Intern)
Number of pages: 1
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Title of host publication: Book of Abstracts, Sustain 2017
Publisher: Technical University of Denmark (DTU)
Article number: P-2
Main Research Area: Technical/natural sciences
Electronic versions:
SustainAbstracts2017c.compressed_136.pdf

Impact of product configuration systems on product profitability and costing accuracy
This article aims at analyzing the impact of implementing a product configuration system (PCS) on the increased accuracy of the cost calculations and the increased profitability of the products. Companies that have implemented PCSs have achieved substantial benefits in terms of being more in control of their product assortment, making the right decisions in the sales phase and increasing sales of optimal products. These benefits should have an impact on the company's ability to make more accurate cost estimations in the sales phase, which can positively affect the products’ profitability. However, previous studies have not addressed this relationship to a great extent. For that reason, a configure-to-order (CTO) manufacturing company was analyzed. A longitudinal field study was performed in which the accuracy of the cost calculations and the products’ profitability were analyzed before and after a PCS was implemented. The comparison in the case study revealed that increased accuracy of the cost calculations in the sales phase and consequently increased profitability can be achieved by implementing a PCS.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management
Authors: Myrodia, A. (Intern), Kristjansdottir, K. (Intern), Hvam, L. (Intern)
Pages: 12-18
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Main Research Area: Technical/natural sciences

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Ratings:
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.95 SJR 0.894 SNIP 1.921
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.802 SNIP 2.016 CiteScore 2.82
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.97 SNIP 2.45 CiteScore 2.66
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.094 SNIP 3.199 CiteScore 3.08
ISI indexed (2013): ISI indexed yes
Impacts of offshore grid developments in the North Sea region on market values by 2050: How will offshore wind farms and transmission lines pay?

Increasing the integration of renewable energy in Northern and Central Europe markets is greatly influenced by the development of electricity transmission grid infrastructure. On the background of the fast development of offshore wind energy and its connection to the onshore electricity systems, a coordinated grid development in the North Sea may not only save costs for individual wind farms, but also deliver additional benefits through the provision of increased interconnection of electricity markets. The previous studies do not include offshore wind development with high ambition in the long term perspective and do not focus on the assessment of the specific effects on the economic value of offshore wind farms connected to Belgium, Norway the UK, the Netherlands, and Germany (North Sea Link, Cobra Cable, Viking Link, Nord Link, BritNed and Nemo Link). This paper tries to shed some lights on the substantial differences in the expected economic exposure of wind power plants and transmission lines to the development of the electricity grid in the North Sea. Since details of the prospective energy system around the North Sea region shape these revenue expectations, we further develop and apply the energy model Balmorel. The tool is used to quantify effects of the implementation of a meshed offshore grid compared to a radial grid that connects wind farms in a non-coordinated fashion to the countries by 2050. The model runs conducted for the present paper show substantial variation of expectable market values of wind farms on hub level due to impacts of different options for grid structures. The results aim to inform the discussion on possibilities for the allocation of grid expansion costs to the different connected countries including Belgium, Denmark, Germany, the Netherlands, Norway and Britain.
Implementation and Performance Management group

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Ipsen, C. (Intern), Edwards, K. (Intern), Poulsen, S. (Intern), Seim, R. (Intern)
Publication date: 2017
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Main Research Area: Technical/natural sciences
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Implementation of preventive interventions – what are the contextual co-players and opponents?

Statement of the problem
Preventive interventions aims at improving the psychosocial work environment within organizations. The nature of preventive interventions are therefore that it affects the context in which it is implemented. We will claim that the context also affects the implementation of the intervention. When the context affects the intervention the current approach is to consider to which extent the intervention program was followed (implementation fidelity, (Carroll et al., 2007)). Implementation fidelity implies two underlying logics, one that intervention models always are applicable, and two that the
model is implemented in a static organization (Gish, Poulsen, & Ipsen, 2014; K. Nielsen, 2013). Implementation fidelity does not explain which organizational and managerial circumstances that affected the intervention positively or negatively. Thus, we find studies that show intervention models work, but the studies cannot explain why the intervention models work. Realistic evaluation has been suggested as an approach to gain information about which circumstances have affected who, and under which conditions (Hasle, Kvorning, Rasmussen, Smith, & Flyvholm, 2012; K. Nielsen, Abildgaard, & Daniels, 2014; Starheim, 2014).

When investigating the effects of interventions, it remains unclear which conditions have influenced the implementation process. The initial conditions suggested as important for the implementation process is among others management support (Cox et al., 2000; Kompier, Geurts, Grunemann, Vink, & Smulders, 1998). Others have also pointed to the importance of employee involvement (Lamontagne, Keegel, Louie, Ostry, & Landsbergis, 2007; Karina Nielsen, Randall, Holten, & Gonzalez, 2010). However, the studies do not explain the causal relation behind. Qualitative studies find that the term management support is too broad a term, because support from both top management and the first line manager is crucial for the implementation process (Ipsen, Gish, & Poulsen, 2014; K. Nielsen, 2013). The general recommendation about employee involvement in interventions is criticized because it is not specified whether the involvement should be of all employees during the entire process, or it should just be involvement of few employees in one intervention step. (K. Nielsen, 2013). Generally, we know much about the criteria for initiating an intervention, but we need more knowledge about how implementation actually happens. This paper investigates the promoting and inhibiting factors when implementing a preventive intervention. The majority of studies investigating promoting and inhibiting factors in relation to implementation success primarily focus on the promoting factors. Inhibiting factors are lack of time for the intervention, change history in the organization, and that the intervention goals are not linked to the company’s KPIs (Ipsen et al., 2014). Some of the promoting factors will inevitably be inhibiting when they are absent, but we do not know how lack of management support manifest itself.

Procedures In Denmark the worksites within hospitals is managed by five regions. The Capital Region of Denmark employs 36000 people, who primarily work within healthcare. The worksites are primarily hospitals, but there are also residential accommodation and pharmacies. All capital worksites fill out an employee satisfaction survey every third year. When the results from the survey is announced, the worksites should identify target areas and hereafter initiatives to the target areas. We have identified the worksites where there has been a positive development in the psychosocial work environment from the employee satisfaction survey in 2011 to the survey in 2014. We choose four worksites, where we do interviews with the managers and facilitate a chronicle workshop (Limborg & Hvenegaard, 2011; Poulsen, Ipsen, & Gish, 2014) with employees. The interviews seeks to investigate which initiatives was launched as a reaction to the employee satisfaction survey in 2011, and the chronicle workshop investigates whether the initiatives was actually implemented in the daily work routines, and whether other circumstances could have influenced the employee satisfaction survey in 2014.
Improved formulations and an Adaptive Large Neighborhood Search heuristic for the integrated berth allocation and quay crane assignment problem

This paper focuses on the integrated berth allocation and quay crane assignment problem in container terminals. We consider the decrease in the marginal productivity of quay cranes and the increase in handling time due to deviation from the desired position. We consider a continuous berth, discretized in small equal-sized sections. A number of enhancements over the state-of-the-art formulation and an Adaptive Large Neighborhood Search (ALNS) heuristic are presented. Computational results reveal that the enhancements improve many of the best-known bounds, and the ALNS outperforms the state-of-the-art heuristics for many instances. We also conduct further analysis on a new larger benchmark.
Improving Healthcare Logistics Processes

Healthcare costs are increasing due to an ageing population and more sophisticated technologies and treatments. At the same time, patients expect high quality care at an affordable cost. The healthcare industry has therefore experienced increasing pressures to reduce the cost of healthcare provision whilst providing high quality care. Logistics activities in hospitals provide a significant opportunity for cost containment in healthcare through the implementation of best practices.

Literature provides little guidance on how to improve healthcare logistics processes. This study investigates logistics processes in hospitals and aims to provide theoretically and empirically based evidence for improving these processes to both expand the knowledge base of healthcare logistics and provide a decision tool for hospital logistics managers to improve their processes.

Case studies were conducted at hospitals in Denmark and the US investigating three different types of processes: bed logistics, hospital cleaning, and pharmaceutical distribution. Based on an analysis and comparison of the case studies, a set of factors were identified influencing the decision on how to improve healthcare logistics processes. Furthermore, a method for benchmarking healthcare logistics processes was developed. Finally, a theoretically and empirically founded framework was developed to support managers in making an informed decision on how to improve healthcare logistics processes.

This study contributes to the limited literature concerned with the improvement of logistics processes in hospitals. Furthermore, the developed framework provides guidance for logistics managers in hospitals on how to improve their processes given the circumstances in which they operate.

General information

State: Published
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Number of pages: 375
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Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
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Improving Healthcare Logistics Processes
Source: PublicationPreSubmission
Source-ID: 134814357
Publication: Research › Ph.D. thesis – Annual report year: 2017

Improving Productivity in Building Construction – by Repetitions in Products, Processes, and Organisations

This thesis builds on several studies with connection to the lack of productivity in building construction. It seeks to enhance the conditions for improving productivity in the fragmented building construction industry, by exploring how a modular thinking of products, processes and organisations can be reapplied on new building construction projects.

Complexity theory is used for diagnosis and modularity theory for the remedy towards the high degree of complexity, which is seen as the root of unproductivity. De-sign Research Methodology is followed to structure and organise the different studies of the thesis into descriptive study I, exploratory study, prescriptive study and descriptive study II stages. In the descriptive study I the status quo of public hospital building in Denmark is investigated in order to demonstrate the high degree of complexity impeding flow and hindering a better utilisation of the repetitions effect across projects. In the first part of the exploratory study, a general contractor’s attitudes and experiences with modularity in building projects are examined in order to highlight the many pitfalls and potential difficulties that modular designs represent from the practitioner’s perspective. In the second part of the exploratory study, examples of the fragmented kinds of modular applications around the world are compiled in order to demonstrate the inconsistent use, but still universal appeal that the
approach carries with respect to building construction. Next, the prescriptive study first tests two applications of the Qualitative Comparative Analysis (QCA), one relating to the tender result and one relating to the occurrence of a dispute. The QCA is presented as a tool to utilize the repetitions effect across projects to predict processes and make choices accordingly, thus avoiding undesirable outcomes. The first part of the descriptive study II tests an activity-clustering tool, the Design Structure Matrix (DSM), which allows one to split the construction process into separate modules, making dependencies clear. Together, the two tools represent methods of increasing productivity by taking advantage of the patterns existing within and across projects. Finally, the second part of the descriptive study II shows how a mapping of the complete product and information flow throughout the whole building pro-cess can highlight the chances to implement modularity and thereby increase productivity further. Taken together, the studies pave the road for breaking down the overall project organisation into smaller parts and thus preparing it for modularisation. All in all, this thesis aims to show the potential of modularity not only at product level, but also at the process and organisation levels in building construction. Although the gain may not be immediately visible, it is worth the effort for all parties involved to zoom out before each project start, visualise the iterative patterns and possible pathways of modular solutions in the specific project environment and then set off together. With an eye to taking advantage of the repetitions occurring within and across projects, this thesis advocates that processes and organisations can be made remarkably more productive and that there is a great unused potential in the projects’ inherent repetitions effect.

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Improving substance information in usetox®, part 1: discussion on data and approaches for estimating freshwater ecotoxicity effect factors
The scientific consensus model USEx® is recommended by the European Commission as the reference model to characterize life cycle chemical emissions in terms of their potential human toxicity and freshwater aquatic ecotoxicity impacts in the context of the International Reference Life Cycle Data System (ILCD) Handbook and the Environmental Footprint pilot phase looking at products (PEF) and organisations (OEF). Consequently, this model has been systematically used within the PEF/OEF pilot phase by 25 EU industry sectors, which manufacture a wide variety of consumer products. This testing phase has raised some questions regarding the derivation of and the data used for the chemical-specific freshwater ecotoxicity effect factor in USEx®. For calculating the potential freshwater aquatic ecotoxicity impacts, USEx® bases the effect factor on the chronic hazard concentration (HC50) value for a chemical calculated as the arithmetic mean of all logarithmized geometric means of species-specific chronic lethal (or effect) concentrations (L(E)C50). We investigated the dependency of the USEx® effect factor on the selection of ecotoxicological data source and toxicological endpoints, and we found that both influence the ecotoxicity ranking of chemicals and may hence influence the conclusions of a PEF/OEF study. We furthermore compared the average measure (HC50) to other types of ecotoxicity effect indicators like the lowest species EC50 or NOEC, frequently used in regulatory risk assessment, and demonstrated how they may also influence the ecotoxicity ranking of chemicals. We acknowledge that these indicators represent different aspects of a chemical’s ecotoxicity potential and discuss their pros and cons for a comparative chemical assessment as performed in LCA and in particular within the PEF/OEF context. This article is protected by copyright. All rights reserved.

General information
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Improving substance information in usetox®, part 2: Data for estimating fate and ecosystem exposure factors

The scientific consensus model USEtox® is developed since 2003 under the auspices of the UNEP-SETAC Life Cycle Initiative as a harmonized approach for characterizing human and freshwater toxicity in life cycle assessment (LCA) and other comparative assessment frameworks. Using physicochemical substance properties, USEtox® quantifies potential human toxicity and freshwater ecotoxicity impacts by combining environmental fate, exposure and toxicity effects information, considering multimedia fate and multi-pathway exposure processes. The main source to obtain substance properties for USEtox® 1.01 and 2.0 is the Estimation Program Interface (EPI SuiteTM ) from the U.S. Environmental Protection Agency. However, since the development of the original USEtox® substance databases, new chemical regulations have been enforced in Europe such as the REACH and the Plant Protection Products regulations. These regulations require that a chemical risk assessment for humans and the environment is performed before a chemical is placed on the European market. Consequently, additional physicochemical property data and new toxicological end-points are now available for thousands of chemical substances. The aim of the present study is to explore to which extent the new available data can be used as input for USEtox® - especially for application in Environmental Footprint studies - and to discuss how this would influence the quantification of fate and exposure factors. Initial results show that the choice of data source and the parameters selected can greatly influence fate and exposure factors leading to potentially different rankings and relative contributions of substances to overall human toxicity and ecotoxicity impacts. Moreover, it is crucial to discuss the relevance of exposure factor for freshwater ecotoxicity impacts particularly for persistent highly adsorbing and bio-accumulating substances. This article is protected by copyright. All rights reserved.
Improving the representation of modal choice into bottom-up optimization energy system models

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, University of California at Davis, E4SMA, University College Cork, Chalmers University of Technology
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Number of pages: 1
Including product features in process redesign

This article suggests a visual modelling method for integrating models of product features with business process models for redesigning the business processes involving specifications of customer-tailored products and services. The current methods for redesigning these types of business processes do not take into account how the product features are applied throughout the process, which makes it difficult to obtain a comprehensive understanding of the activities in the processes and to generate significant improvements. The suggested approach models the product family using the so-called product variant master and the business process modelling notation for modelling the process flow. The product model is combined with the process map by identifying features used in each step of the process flow. Additionally, based on the information absorbed from the integrated model, the value stream mapping modelling technique is applied to the specification process to evaluate its performance in quantifiable terms. The proposed modelling approach was investigated through three case studies. Experiences from the case studies were that the suggested modelling techniques gave additional insight into the specification processes and formed a good basis for process improvement. Furthermore, the case studies indicated that the suggested modelling techniques were applicable and easy to use.

General information

State: Published
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Inclusive planning in transport and energy STI-policies

Transition to a more sustainable and fossil-free energy system is of global interest, and implies social challenges for the developed world including the European Union. In particular, the energy consumption related to transport constitutes a significant challenge. If not serious changes are made the transport sector can lead to more than a doubling of CO2 emissions by 2050 (Edenhofer et al., 2014). Transport in this context includes transport of both people and goods, and it includes transport on land, sea and air. Responsible research and innovation should take into account this large social challenge of securing a more sustainable and fossil-free energy system. Furthermore, responsible research and innovation should take into account both the required changes in all citizens' daily life due to this transition as well as the driving force of grassroot innovation movements.

Increased accuracy of cost-estimation using product configuration systems

This article describes an approach for utilizing Product Configuration Systems (PCS) for quantifying project costs in project-based companies. It presents a case study demonstrating a method of quantifying costs in a way that makes it possible to configure cost- and time estimates. Piecework costs, material costs and sub-supplier costs are used as principle cost elements and linked to structural and process elements to facilitate configuration. The cost data are used by the PCS to generate fast and accurate cost-estimates, quotations, time estimates and cost summaries. The described cost quantification principles have been used in a Scandinavian SME (Small and Medium-sized Enterprise) since the 90's, but
have since 2011 been adopted to be used in a configuration system. A longitudinal case study was conducted to compare cost and time-estimation accuracy before and after implementation. We conclude that the proposed method for grouping costs, combined with a PCS, can be used in project-based construction industries to make more accurate estimates of project costs. Reasons for improved accuracy are, according to company experts, the increased documentation and visibility of cost-estimates, dynamic allocation of variable costs, version control of cost-agreements and the ability to handle an increased level of cost details.

**General information**

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**India's INDC for transport and 2 C stabilization target**

Transport sector accounted for 13 % of India's energy-related CO2 emissions. India's Intended Nationally Determined Contributions (INDC) specify an economy wide decarbonization target of 33 to 35 % between 2005 and 2030 and includes announcements for urban transport, intercity transportation infrastructures, sustainable logistics and inland waterways to achieve these reductions. The Paris agreement that followed the announcement of the INDC increased the global ambition to stabilize the greenhouse gases so that maximum temperature rise is limited to 2 °C with an enhanced ambition for 1.5 °C. The paper analyses how far INDC will reduce the emissions from transport and to what extent a 2 °C temperature stabilization goal will decarbonize the transport sector. The analysis is carried out using ANSWER MARKAL model for evaluating the energy system in combination with a transport demand module to model future scenarios for India till year 2050. Three scenarios are explored in this paper: i) a business-As-usual scenario ii) an INDC scenario iii) implementation of INDC in a strong climate regime aiming for the 2 °C target. The assessment shows that CO2 reductions from transport would happen through a wide portfolio of options. The highest mitigation is achieved through sustainable mobility strategies, followed by fuel economy standards. Electric vehicles offer significant mitigation benefits, however these are more significant post 2030.

**General information**

State: Published  
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Indicators for environmental sustainability

Decision making on sustainable consumption and production requires scientifically based information on sustainability. Different environmental sustainability targets exist for specific decision problems. To observe how well these targets are met, relevant environmental indicators are needed. In this study, we reviewed indicators applied in life cycle assessment (LCA), planetary boundary framework (PB), and Sustainable Development Goals (SDGs) developed under United Nation. The aim is to 1) identify their applications and relevant decision context; 2) Review their indicators and categorize them into Drivers-Pressures-States-Impacts-Responses scheme for comparison and; 3) provide suggestions for indicator system choice and important aspects to consider when choosing.

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Industri 4.0 set i lyset af kvalitetsstyring

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Industrial excess heat for district heating in Denmark

Excess heat is available from various sources and its utilisation could reduce the primary energy use. The accessibility of this heat is however dependent amongst others on the source and sink temperature, amount and potential users in its
vicinity. In this work a new method is developed which analyses excess heat sources from the industrial sector and how they could be used for district heating. This method first allocates excess heat to single production units by introducing and validating a new approach. Spatial analysis of the heat sources and consumers are then performed to evaluate the potential for using them for district heating. In this way the theoretical potential of using the excess heat for covering the heating demand of buildings is determined. Through the use of industry specific temperature profiles the heat usable directly or via heat pumps is further found. A sensitivity analysis investigates the impact of future energy efficiency measures in the industry, buildings and the district heating grid on the national potential. The results show that for the case study of Denmark, 1.36 TWh of district heat could be provided annually with industrial excess heat from thermal processes which equals 5.1% of the current demand. More than half of this heat was found to be usable directly, without the need for a heat pump.

General information
State: Published
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**Information-triggered Co-evolution: A Combined Process Perspective**

Core elements of design work include the development of problem/solution understanding, as well as information and knowledge sharing activities. However, their interrelationships have been little explored. As such, this work aims to take the first steps towards a more integrated evaluation and description of the interaction between understanding and activity, based around co-evolutionary transition events; and start to answer the question: How can the link between co-evolution and activity be systematically characterized as a foundation for a more fundamental description of design activity? A protocol analysis is used to provide the basis for characterization of different types of coevolutionary transition event. A number of distinct event types are described and significant differences in information use and team engagement are identified across transition events. Bringing these findings together, we propose a unitary model of the interaction between activity and understanding around co-evolutionary transition events. This has a number of implications for future theory building and testing in both design activity and wider design research.

**General information**

State: Published
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**Infrastructure Systems in a Sustainable City**

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Innovation Dialectics: An Extended Process Perspective on Innovation in Services

Services are characterised by the involvement of customers and other interest groups in the innovation process. The aim of this study is to understand how and why, in the service context, tensions and potential conflicts between heterogeneous interest groups unfold during processes of innovation. The empirical field in which the investigation was set is facility services, a type of business-to-business support services. The findings were extracted from a longitudinal, in-depth case study of a Danish, multi-national organisation over 13 years, complemented with an explorative study in the Danish facility service context. The findings suggest that tensions and conflicts between heterogeneous interest groups are an intrinsic element of innovation processes in services, and that emphasising them might actually support a clearer understanding of processes of innovation in services. The outcome of the analysis is a process model, which proposes innovation dialectics as one of the driving mechanisms of innovation in services.
Integer programming techniques for educational timetabling

Educational timetabling problems require the assignment of times and resources to events, while sets of required and desirable constraints must be considered. The XHSTT format was adopted in this work because it models the main features of educational timetabling and it is the most used format in recent studies in the field. This work presents new cuts and reformulations for the existing integer programming model for XHSTT. The proposed cuts improved hugely the linear relaxation of the formulation, leading to an average gap reduction of 32%. Applied to XHSTT-2014 instance set, the alternative formulation provided four new best known lower bounds and, used in a matheuristic framework, improved eleven best known solutions. The computational experiments also show that the resulting integer programming models from the proposed formulation are more effectively solved for most of the instances.
Integrated climate change risk assessment: A practical application for urban flooding during extreme precipitation

Risk assessments of flooding in urban areas during extreme precipitation for use in, for example, decision-making regarding climate adaptation, are surrounded by great uncertainties stemming from climate model projections, methods of downscaling and the assumptions of socioeconomic impact models. The multidisciplinary character of such risk assessments also requires that research groups and experts from different scientific disciplines combine knowledge and share model outputs. This paper describes an integrated framework and tool, the Danish Integrated Assessment System (DIAS), which has been designed to address the complex linkages between the different kinds of data required in assessing climate adaptation. It emphasizes that the availability of spatially explicit data can reduce the overall uncertainty of the risk assessment and assist in identifying key vulnerable assets. The usefulness of such a framework is demonstrated by means of a risk assessment of flooding from extreme precipitation for the city of Odense, Denmark. A sensitivity analysis shows how the presence of particularly important assets, such as cultural and historical heritage, may be addressed in assessing such risks. The output of the risk assessment for Odense indicates that highly detailed geographical data reduce the overall uncertainty and assist climate adaptation decision-makers in focusing on protecting those assets that are considered to be relevant in the given context. Also, using an integrated framework such as DIAS enables the relative importance of the different factors (i.e. degree of climate change, assets value, discount rate etc.) to be determined, thus influencing the overall output of the assessment.
Integrated Optimisation for Public Transport System with Joint Schedule- and Frequency-Based Services

Integrated Rolling Stock Planning for Suburban Passenger Railways

One of the core issues for operators of passenger railways is providing sufficient number of seats for passengers while keeping operating costs at a minimum. The process a railway operator undertakes in order to achieve this is called rolling stock planning. Rolling stock planning deals with deciding how to utilise the fleet of available train units in space and time. In this thesis, rolling stock planning has been studied, using as case study DSB S-tog, the suburban passenger railway operator of the City of Copenhagen. At DSB S-tog, the rolling stock planning process is subdivided according to time horizon into two subprocesses. Firstly, there is the long-term circulation planning process, in which planning is conducted for anonymous, virtual train units months in advance. Secondly, there is the short-term train unit dispatching process, which covers the execution of the long term circulation plan. In the train unit dispatching process, the anonymous, virtual train units from the circulation planning process will have real, physical train units assigned to them. The train unit dispatching process has a short-term time horizon of days, hours and minutes and makes sure the actual, real-world train services are performed. Disruptions are also handled in this process. In the long term circulation planning phase of rolling stock planning, a large number of railway-specific requirements must be taken into account: The physical railway infrastructure must be adhered to, e.g., platform and depot track capacities, the rules of the train control system and the order in which train units may be parked so as not to obstruct each other’s movements; All trains services of the timetable must have a least one train unit assigned; Only the available rolling stock can be used in the plan; The plan should provide seating capacity according to the passenger demand and provide an even distribution of flexible space for bicycles etc.; Planned shunting operations in the depot should have suicient personnel on duty; Train units must undergo scheduled maintenance etc., and consumables must be refilled; Certain train services must have train units with additional train control system equipment installed, special passenger counting equipment installed and/or perform predefined exposure of commercials.

In the short-term train unit dispatching phase of rolling stock planning, additional railwayspecific requirements include: Exterior graffiti removal and unscheduled maintenance on demand and sometimes within a given time frame; Make available train units to meet surveillance video recording requests from the police within a given time frame. Due to the large number of railway-specific requirements and their nature, rolling stock planning is traditionally conducted in a step-
by-step manner, in which the individual planning processes are not integrated with each other. Needless to say, this yields rolling stock plans that are either suboptimal or infeasible with regard to the requirements. In this thesis it is shown that it is possible to design and implement a rolling stock planning model integrating into one planning process all the railway-specific requirements of DSB S-tog, all at the same time. This integrated rolling stock planning model is implemented using a greedy heuristic and makes use of the novel (train) unit order conservation principle, implemented as special side constraints to a resource constrained shortest path algorithm. The integrated rolling stock planning model is tested extensively on 15 real-world, manually constructed rolling stock plan data instances. When run on these instances, the greedy heuristic can achieve an average economic gain of approx. 2% with processing times in all cases less than 1 hour 20 minutes. In addition to this, the greedy heuristic can make typically infeasible rolling stock plans feasible within just a few minutes of processing time. Moreover, in this thesis a number of different economic net value upper bound calculation models are designed, implemented and tested. The net value upper bound calculation models implement the railway-specific requirements to a varying degree and consequently expose different properties with regard to tightness of bounds and processing times. The net value upper bound model having the highest degree of requirements integration adheres to 47% of the requirements by count. Using this tightest net value upper bound calculation model, it is shown that the greedy heuristic mentioned before is able to gain approx. 1/3 of the relative gap between the net value of the original, manual plans and the net value upper bound. Moreover, it is shown that in most cases, the net value of the original, manual plans already lie close to the upper bound.

Furthermore, a branch-and-price based matheuristic integrated rolling stock planning model is designed, implemented and tested. It is shown that this type of matheuristic model is able to adhere fully to all railway-specific requirements, and that the vast majority of requirements can be integrated into the optimisation steps of the atheuristic algorithm. The branch-and-price matheuristic model can solve small instances (e.g., in the form of matheuristic iterations) to optimality. Used in conjunction with the greedy heuristic, the two methods combined can achieve an additional small gain in objective value not achievable using each method by itself. With a yearly cost of the rolling stock operation in the hundreds of million DKK, the potential benefit of a real-world application of the models to DSB S-tog is in the order of several million DKK per year. In addition to this, a substantial benefit can be gained by the way the models can automate the current, manual planning procedures. This will enable planners to invest more creativity and meticulousness into the planning process as a result of being liberated from manual planning procedures. For these reasons, DSB S-tog is eager to proceed with the real-world application of the models developed in this thesis.
Integrating experiences from operations into engineering design: modelling knowledge transfer in the offshore oil industry

Summative Statement: Integrating human factors and users’ experiences in design projects is a well-known challenge. This study focuses on the specific challenges for transferring these experiences and how using a knowledge transfer model can help this integration on the design of high-risk productive work systems, such as offshore oil rigs.

Problem statement: Poorly designed workspaces result in adverse effects on occupational health and safety, as well as reduced efficiency and productivity. In large-scale engineering projects and, in special the offshore oil sector that has to face geographical and workwise distance between operations and engineering design teams, integrating human factors and transferring knowledge are key aspects when designing for better performance systems.

Research Objective: Based on an in-depth empirical investigation in an offshore oil company, this study aims to provide a framework for the knowledge transfer process from operations into engineering design that helps identifying and facing the challenges for such a transfer process.

Methodology: The study was carried out as a case study in an offshore oil company. We used the empirical data collected through interviews and surveys to identify the main challenges for the knowledge transfer process based on a pragmatic 4-step framework. At a later stage, we developed a set of requirements to improve the knowledge transfer from operations into design.

Results: Knowledge transfer implies the knowledge to be 1) captured on the operating units, 2) transformed into an engineering design context, 3) transferred to the appropriate project team members, and finally 4) applied throughout the design process of new installations. It is a four-step process involving challenges going from not having specific performance indicators encouraging rig workers to focus on capturing knowledge targeted to design to not having this knowledge available to be applied at the right time in the projects, making it at times impossible to implement in terms of design specifications. Challenges also pass through dealing with the large amount of knowledge registered in the systems without standards to categorise and store this knowledge, to being difficult to access and retrieve the knowledge in the systems.

Discussion: Transferring knowledge and experiences from users brings human factors into play and modelling the knowledge transfer process provides a better idea of what is involved. The entire process requires a continuous flow in order to develop a permanent repository that is continuously updated and is used to optimise the design towards better system performance. Overall, the requirements developed based on the identified challenges point to the need to have clear procedures and standards to capture the operational knowledge, as well as an alignment of the key performance indicators related to the knowledge transfer process, since it will allow for better collaboration and communication between the two divisions. Furthermore, clear methods and resources to systematise and transform the knowledge, together with appropriate methods to make it available to the project teams are paramount.

Conclusions: Using a framework helps to identify challenges is of importance for both practitioners and researchers, since it 1) helps developing practical requirements for improving knowledge transfer and 2) supports framing the knowledge transfer process in a systematic way, allowing for comparison within different cases towards generalising the findings.
Integrating life cycle impacts in chemical substitution

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Fantke, P. (Intern)
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Source: PublicationPreSubmission
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Integrating physical pressures, hazard prevention and urban development in the COHERENT project

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Organisations: Department of Management Engineering, Systems Analysis
Authors: Larsen, M. A. D. (Intern), Halsnæs, K. (Intern)
Number of pages: 1
Publication date: 2017

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Conference: Sustain 2017, Kgs. Lyngby, Denmark, 06/12/2017 - 06/12/2017
Electronic versions: SustainAbstracts2017c.compressed_113.pdf
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Integrating police reports with geographic information system resources for uncovering multidimensional patterns of pedestrian crashes in Denmark

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Queensland, Technical University of Denmark
Authors: Prato, C. G. (Ekstern), Kaplan, S. (Intern), Patrier, A. (Ekstern), Rasmussen, T. K. (Intern)
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Main Research Area: Technical/natural sciences
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Integrating robust timetabling in line plan optimization for railway systems

We propose a heuristic algorithm to build a railway line plan from scratch that minimizes passenger travel time and operator cost and for which a feasible and robust timetable exists. A line planning module and a timetabling module work iteratively and interactively. The line planning module creates an initial line plan. The timetabling module evaluates the line plan and identifies a critical line based on minimum buffer times between train pairs. The line planning module proposes a new line plan in which the time length of the critical line is modified in order to provide more flexibility in the schedule. This
flexibility is used during timetabling to improve the robustness of the railway system. The algorithm is validated on the DSB S-tog network of Copenhagen, which is a high frequency railway system, where overtakings are not allowed. This network has a rather simple structure, but is constrained by limited shunt capacity. While the operator and passenger cost remain close to those of the initially and (for these costs) optimally built line plan, the timetable corresponding to the finally developed robust line plan significantly improves the minimum buffer time, and thus the robustness, in eight out of ten studied cases.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Transport DTU, KU Leuven
Authors: Burggraeve, S. (Ekstern), Bull, S. H. (Intern), Vansteenwegen, P. (Ekstern), Lusby, R. M. (Intern)
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.43 SJR 1.935 SNIP 2.531
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.941 SNIP 2.678 CiteScore 4.23
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.046 SNIP 3.228 CiteScore 3.84
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.847 SNIP 3.673 CiteScore 4.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.585 SNIP 2.782 CiteScore 2.76
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.356 SNIP 3.217 CiteScore 2.85
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.975 SNIP 2.438
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.087 SNIP 2.351
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.965 SNIP 2.492
Scopus rating (2007): SJR 0.899 SNIP 1.518
Scopus rating (2006): SJR 1.965 SNIP 2.7
Scopus rating (2005): SJR 1.567 SNIP 3.134
Scopus rating (2004): SJR 1.406 SNIP 2.78
Scopus rating (2003): SJR 1.152 SNIP 1.901
Integrating rolling stock scheduling with train unit shunting

In this paper, we consider integrating two important railway optimization problems, in particular the Rolling Stock Scheduling Problem and the Train Unit Shunting Problem. We present two similar branch-and-cut based approaches to solve this integrated problem and, in addition, provide a comparison of different approaches to solve the so-called Track Assignment Problem, a subcomponent of the Train Unit Shunting problem. In this analysis we demonstrate, by way of a counter example, the heuristic nature of a previously argued optimal approach. For the integrated problem we analyze the performance of the proposed approaches on several real-life case studies provided by DSB S-tog, a suburban train operator in the greater Copenhagen area. Computational results confirm the necessity of the integrated approach; high quality solutions to the integrated problem are obtained on instances where a conventional, sequential approach ends in infeasibility. Furthermore, for the considered instances, solutions are typically found within a few minutes, indicating the applicability of the methodology to short-term planning.
Integrating Work Environment Considerations Into Lean and Value Stream Mapping

Public healthcare systems and in particular hospitals in industrialized countries face growing demand in terms of number of patients and new advanced treatments. Funding does not increase proportionately and hospitals are ever searching for methods to increase productivity. Lean management has emerged as a dominant approach to increase productivity in healthcare (Edwards et al. 2012; Radnor, Holweg, & Waring, 2012). In Denmark, lean management has become widely used with hospitals developing their own lean departments and consultants. Lean management is developed in the car manufacturing industry (Spear & Bowen, 1999; Womack & Jones, 1996) and is based on standardisation, levelling, and optimisation of work flows through value stream mapping (VSM) (Rother & Shook, 2009) and eliminating waste. Lean is essentially a rationalization approach that will reduce waste and increase productivity thereby causing work intensification (Westgaard & Winkel, 2011) with negative impact on work environment. To compensate for the negative effects of lean a work environment complement (ErgoVSM) has been developed in Sweden (Jarebrand et al. 2010). ErgoVSM integrates work environment considerations into VSM by introducing work environment measurements to be assessed for each identified work activity. The measurements are: 1) Physical: a) work posture, b) weight/force, c) physical load, d) potential, e) porosity and f) variation. And 2) psychosocial dimensions: a) Demands, b) control, c) communication, d) potential, e) mental porosity and f) variation in contents. However, lean management and the VSM analysis focus on waste to identify workflow problems and develop an improved workflow. The lean mindset and waste analysis is taught to workshop participants by a lean coach. The focus and mindset of reducing waste is much different from identifying and discussing work environment problems and there might be a tension between the two perspectives. Subsequently it may not be possible to integrate work environment considerations into lean and VSM. The purpose of this presentation is to examine if it is possible to integrate work environment considerations into lean and VSM. This is done by applying the ErgoVSM method as part of a normal lean intervention. The paper will answer if ErgoVSM can identify physical and psychosocial work environment problems and develop solutions as part of lean and VSM.
Integration of Fiber-Reinforced Polymers in a Life Cycle Assessment of Injection Molding Process Chains with Additive Manufacturing

Additive manufacturing technologies applied to injection molding process chain have acquired an increasingly important role in the context of tool inserts production, especially by vat polymerization. Despite the decreased lifetime during their use in the injection molding process, the inserts come with improvements in terms of production time, costs, exibility, as well as potentially improved environmental performance as compared to conventional materials in a life cycle perspective. This contribution supports the development of additively manufactured injection molding inserts with the use of fiber-reinforced vat polymerization technology. The life cycle assessment of the prototyping process chain for rapid prototyping with high exibility provides a base for industrial applications in injection molding.

International cooperative initiatives and the United Nations Framework Convention on Climate Change

International cooperative initiatives (ICIs) are multi-country, multi-actor non-state actions that have the potential to reduce emissions of greenhouse gases. The article summarizes the literature on estimates of emission reduction potentials attributed to ICIs. This summary highlights three key issues: there is a plethora of uncoordinated initiatives, often lacking specific, time-bound goals; to a greater or lesser extent most initiatives overlap with the activities conducted under the aegis of the United Nations Framework Convention on Climate Change (UNFCCC); and few initiatives have set up transparent performance monitoring and reporting mechanisms. The article concludes with two considerations. Firstly, it advocates for the United Nations Environment Programme as one entity that could bring much-needed coordination among ICIs, and between ICIs and national government-led efforts to mitigate climate change. Secondly, it echoes calls for the initiatives to both adopt transparent monitoring, reporting and verification mechanisms, and ensure that their activities are cost-effective with regard to climate change mitigation. Finally, the article outlines the key issues that will need to be addressed to achieve these goals.

Key policy insights

- The emission reductions potential of international cooperative initiatives appears to be limited, which would question some of the rational for promoting them.
- The extent to which international cooperative initiatives overlap with emission reduction efforts under the UNFCCC is uncertain, but believed to be quite large.
- The UNFCCC is arguably ill suited to coordinate and strengthen the accountability of international cooperative initiatives.
In times of change: How distance managers can ensure employees’ wellbeing and organizational performance

Organizations develop and adapt to societal changes and technological developments, where one consequence is that dispersed workers are more common than never before. It is difficult to ensure employee wellbeing and performance, when separating managers from employees by either time or geography. This paper explores the wellbeing of employees doing distance work, and examines the practices of the distance manager aimed at ensuring employee wellbeing and organizational performance. The pilot study uses a case study approach in four organizations with qualitative interviews of distance managers and employees. The study shows both positive and negative aspects of distance work. Positively, the employees find distance work to be professionally challenging and they feel they make a difference in their work. On the negative side is the feeling of loneliness and frustrations about lack of communication. The analysis of distance managers’ practices showed that they used both activities and capabilities in order to ensure employee wellbeing and organizational performance. The activities included planning, newsletters, and surveys, and the capabilities were to listen, create and show trust, and give authority to the employees. Contrary to previous findings on motivating of knowledge workers, our findings show that motivation, surprisingly, is ensured when focusing on the basic needs such as working conditions and belongingness.

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State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Poulsen, S. (Intern), Ipsen, C. (Intern)
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Web of Science (2018): Indexed yes
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Scopus rating (2016): CiteScore 2.81 SJR 1.054 SNIP 1.952
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.977 SNIP 1.933 CiteScore 2.73
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.979 SNIP 2.314 CiteScore 2.69
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.86 SNIP 2.202 CiteScore 2.25
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.87 SNIP 1.895 CiteScore 2.04
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.817 SNIP 1.732 CiteScore 2
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.767 SNIP 1.809
Web of Science (2010): Indexed yes
Intraday market asymmetries — A Nordic example

While the majority of electricity in the Nordic and Baltic countries is traded at the day-ahead market, producers and consumers can use the intraday market to adjust their production commitments according to updated forecasts closer to the time of delivery. This reduces the need for balancing, particularly important for VRE producers, but it also means that the price formation at intraday market can change optimal bidding strategy in the day-ahead market. Through econometric modelling of intraday price premiums, this paper investigates intraday price asymmetries, which potentially can lead to strategic bidding. The intraday market is per definition symmetric, as prices for power sales always correspond to prices for power purchases, however, we find that this symmetry is not reflected in the price structure in regards to the total load adjustment needs.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Soysal, E. R. (Intern), Olsen, O. J. (Intern), Skytte, K. (Intern), Sekamane, J. K. (Intern)
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Main Research Area: Technical/natural sciences
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DOIs: 10.1109/EEM.2017.7981920

Investigating the influence of product perception and geometric features
Research in emotional design and Kansei Engineering has shown that aesthetics play a significant role in the appeal of a product. This paper contributes to establishing a methodology to identify the relationships between perceptions, aesthetic features, desire to own and background of consumers. Surveys were conducted with 71 participants to gather their
perceptions of 11 vase concepts. Advanced statistical analyses, including mixed models, were applied to allow
generalisation of the results beyond the data sample. Significant relations between the desire to own a product and how
the product is perceived were found (the desire to own was found to be related to beautiful, expensive, elegant, exciting,
feminine, common and dynamic vases), as well as between the perceptions and the parameters describing the form of the
vases (a vase was perceived as beautiful if it had many curved lines and was simple and tall). An automated mixed model
analysis was conducted and revealed that general rules can be found between aesthetic features, perceptions and
ownership, which can apply across gender and culture. The findings include design rules that link aesthetic features with
perceptions. These contribute to research as guidelines for design synthesis and can either be implemented via shape
grammars or parametric modelling approaches. These rules are also interesting for 3D printing applications, especially
important when the consumer is the designer. Some of these design rules are linked to the desire to own a product, they
have implications for industry, and they offer guidelines to creating attractive products that people want to own.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Statistics and Data Analysis, Department of
Management Engineering, Technology and Innovation Management, Imperial College London, University of Tokyo
Authors: Perez Mata, M. (Intern), Ahmed-Kristensen, S. (Ekstern), Brockhoff, P. B. (Intern), Yanagisawa, H. (Ekstern)
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Scopus rating (2016): CiteScore 2.78 SJR 1.224 SNIP 1.76
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.956 SNIP 1.827 CiteScore 1.61
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.259 SNIP 2.435 CiteScore 2.38
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.271 SNIP 2.588 CiteScore 2.48
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.825 SNIP 3.307 CiteScore 2.13
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.086 SNIP 2.739 CiteScore 2.37
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.222 SNIP 1.589
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.752 SNIP 1.269
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.901 SNIP 1.09
Investigating the reasons behind the intention to report cycling crashes to the police and hospitals in Denmark

This study explores the factors underlying the reporting intentions of cycling crashes by looking at barriers to reporting from other contexts and eliciting them via a survey and a structural equation model (SEM). The barriers consist of the attitude that crash reporting is useless, the preference to allocate time to other activities, the concerns about family distress and social image, the distrust in the police, and the medical consultation aversion. The survey elicited the reasons as well as socio-economic characteristics, cycling habits and last crash experience of cyclists, and yielded 1512 complete responses that were used for SEM estimation. The empirical analysis revealed that: (i) distrust in the police and medical consultation aversion are related to the reporting intentions both directly and indirectly through the attitude that crash reporting is useless and the preferences to allocate time to other activities; (ii) medical consultation aversion has a higher weight than the distrust in the police in demotivating cycling crash reporting intentions; (iii) the reasons are all strongly related to cyclists’ characteristics and last cycling crash characteristics; and (iv) information provision regarding the societal benefits of crash reporting is important for increasing the reporting rate. (C) 2016 Elsevier Ltd. All rights reserved.

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Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Copenhagen
Authors: Kaplan, S. (Intern), Janstrup, K. H. (Intern), Prato, C. G. (Ekstern)
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Scopus rating (2016): CiteScore 2.36 SJR 1.065 SNIP 1.392
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.023 SNIP 1.454 CiteScore 2.06
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.986 SNIP 1.601 CiteScore 2.02
Investigating the relationship between sustainability and business model innovation in the context of the European food industry

Organisations, and society at large, are nowadays facing enormous and unprecedented challenges in terms of sustainable development (United Nations General Assembly 2015). Therefore, there is an increasing necessity to prioritize sustainability concerns, and ensure the integration of sustainability into organisations' business models. Such a prioritization and integration can in turn generate new opportunities to innovate and differentiate business models (Bocken et al. 2014), and, consequently, be decisive for organisations that want to sustain their competitiveness in the market (Teece 2010; Gambardella & McGahan 2010). Thus, on one hand, business model innovation can help to achieve significant improvements in terms of sustainability (Breuer and Lüdeke-Freund, 2017; Carayannis et al., 2015; Pedersen et al., 2016; Rauter et al., 2017; Schaltegger et al., 2012). On the other, sustainability has the potential to inspire and drive business model innovation (Bocken et al., 2014; Joyce and Paquin, 2016). As effectively explained by Ernesto Ciorra, Head of Innovation and Sustainability at Enel, “we are not sustainable unless we innovate, and in order to innovate, we have to be sustainable” (Global Reporting Initiative 2016). The current study aims to investigate the relationship between sustainability and business model innovation within the European food industry. Empirically, the analysis is based on survey data from 469 companies of seven European countries, namely Denmark, France, Germany, Italy, Netherlands, Spain, and United Kingdom. The overall results show that sustainability is slightly positively related to business model innovation. This seems to be particularly true for German companies, which show a high positive relationship. The result does not hold true for Danish companies, which show a slightly negative relationship. This study has implications for practitioners and scholars who work in the field of sustainability and business model innovation, especially in the context of the European food industry.
Is Earth recognized as a finite system in corporate responsibility reporting?
Companies are increasingly encouraged to frame their sustainability activities and communication around ecological limits, as captured by concepts such as planetary boundaries, climate tipping points or regenerative capacity. Ecological limits may serve as scientific basis for defining environmental sustainability targets at the company level and, moreover, inspire companies to align their product portfolios with emerging societal needs related to sustainable transformations. Although corporate environmental reporting is widely researched, little attention has, hitherto, been given to company use of the ecological limits concepts in stakeholder communication. This study presents a comprehensive review of references made to ecological limits in corporate responsibility (CR) reports in 2000-2014. An exhaustive list of terms related to ecological limits was developed and used to search the CorporateRegister database, which contained approximately 40,000 CR reports from this time period. For every identified reference, we analyzed the context in which the ecological limit term was used in the CR report. We found a 10-fold increase in the number of references made to ecological limits in CR reports during the period 2000-2014. The number of CR reports published in this time period has also increased at a similar rate. Hence, the proportion of companies referring to ecological limits in their CR reports has over the years remained stable; roughly 5%. The most commonly invoked ecological limits were related to climate change and references to "2°C" were by far the most frequent. The vast majority of companies referring to ecological limits did so without specific references to ongoing or planned changes in their activities as a consequence of recognizing these limits. Only a small percentage, predominantly high-tech companies (31 in total), explicitly used ecological limits to define targets for resource consumption, emissions reductions and/or as a stated reason for adjusting their product portfolio. In defining targets for resource consumption or emissions, only a few CR reports dealt explicitly with the issue of allocating resource and emission rights within ecological limits amongst companies and other actors. A longitudinal study of three companies showed that these did not directly report progress towards planned changes based on ecological limits and offered explanations as to why some companies abandoned planned changes altogether. Our findings provide novel insights into the current use of the ecological limits concept by companies and may be useful for actors trying to motivate companies to align their activities with the finite nature of Earth's natural systems.
Scopus rating (2015): SJR 1.609 SNIP 2.383 CiteScore 5.57
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.706 SNIP 2.328 CiteScore 4.07
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.461 SNIP 1.825 CiteScore 3.19
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.419 SNIP 1.742
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.942 SNIP 1.544
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.813 SNIP 1.354
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.942 SNIP 1.489
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.842 SNIP 1.543
Scopus rating (2005): SJR 0.544 SNIP 1.357
Scopus rating (2004): SJR 0.753 SNIP 1.818
Scopus rating (2003): SJR 0.501 SNIP 1.152
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.481 SNIP 1.103
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.419 SNIP 0.85
Scopus rating (2000): SJR 0.694 SNIP 0.888
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.276 SNIP 0.775
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Electronic versions:
Bj_rn_et_al._2016a_Word_with.DOI.pdf. Embargo ended: 14/01/2018
DOI:
10.1016/j.jclepro.2015.12.095
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Source-ID: 2290430901
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ISES Europe - International Society of Exposure Science Regional Chapter for Europe

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Bruinen de Bruin, Y. (Ekstern), Fantke, P. (Intern), Bessems, J. (Ekstern), Dudzina, T. (Ekstern), Connolly, A. (Ekstern), Schlueter, U. (Ekstern), von Goetz , N. (Ekstern)
Knowledge sharing via social media in software development: a systematic literature review

Effective knowledge exchange among software developers is crucial for the competitive performance of their organizations. Today, the constant pressure on businesses to continually innovate and the increasing capability of information technologies to facilitate broader and more distributed communication are driving organizations to leverage social media tools to improve performance. These tools, which have changed the way we share knowledge, enable people to connect, communicate, and collaborate. Research on knowledge sharing via social media is still in its early phases, with a comprehensive overview of the literature yet to be completed. Thus, using a systematic literature review approach, this study aims to map the current literature on the topic in relation to software development. Furthermore, this study highlights the findings of former research and identifies gaps in the literature. The study offers several insights for researchers and practitioners and proposes a future research agenda to strengthen knowledge in the field.

General information
State: Published
Organisations: Management Science, Implementation and Performance Management, Department of Management Engineering
Authors: Sarka, P. B. (Intern), Ipsen, C. (Intern)
Knowledge transfer from building operation to construction.

Purpose: To investigate how knowledge that derives from operation and maintenance of buildings can be stored and transferred in order to be reused in a future building project? Design/methodology/approach: The paper is theoretically based on knowledge management with a particular focus on interdepartmental knowledge transfer between departments responsible for operation and management and departments responsible for building projects in organisations with large and fast changing building portfolios. The paper includes a case study of the FM organisation of the Technical University of Denmark with data collection mainly by interviews with managers and staff in the relevant departments in this organisation. Findings: The case organisation seems to be aware of the importance of sharing and transferring their organisational knowledge. Over the last five years, the organisation has developed different tools and adopted several processes, aiming to the integration of the knowledge they possess from many years of operation and maintenance of the existing buildings. However, there are many situations, where the tools and processes do not work efficiently, and therefore the knowledge transfer is not sufficiently effective. It is apparent that the best results can be achieved only if the different actors involved in a construction project collaborate aiming towards the same objectives. Originality/value: The paper presents and evaluates a case of interdepartmental knowledge transfer in an organisation, which has a strong focus on improving the interconnections between building operation and planning new building projects.
LCIA framework and cross-cutting issues guidance within the UNEP-SETAC Life Cycle Initiative

Increasing needs for decision support and advances in scientific knowledge within life cycle assessment (LCA) led to substantial efforts to provide global guidance on environmental life cycle impact assessment (LCIA) indicators under the auspices of the UNEP-SETAC Life Cycle Initiative. As part of these efforts, a dedicated task force focused on addressing several LCIA cross-cutting issues as aspects spanning several impact categories, including spatiotemporal aspects, reference states, normalization and weighting, and uncertainty assessment. Here, findings of the cross-cutting issues task force are presented along with an update of the existing UNEP-SETAC LCIA emission-to-damage framework. Specific recommendations are provided with respect to metrics for human health (Disability Adjusted Life Years, DALY) and ecosystem quality (Potentially Disappeared Fraction of species, PDF). Additionally, we stress the importance of transparent reporting of characterization models, reference states, and assumptions, in order to facilitate cross-comparison between chosen methods and indicators. We recommend developing spatially regionalized characterization models, whenever the nature of impacts shows spatial variability and related spatial data are available. Standard formats should be used for reporting spatially differentiated models, and choices regarding spatiotemporal scales should be clearly communicated. For normalization, we recommend using external normalization references. Over the next two years, the task force will continue its effort with a focus on providing guidance for LCA practitioners on how to use the UNEP-SETAC LCIA framework as well as for method developers on how to consistently extend and further improve this framework.
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.83 SJR 1.615 SNIP 2.382
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Scopus rating (2015): SJR 1.609 SNIP 2.383 CiteScore 5.57
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.706 SNIP 2.328 CiteScore 4.07
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.461 SNIP 1.825 CiteScore 3.19
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.419 SNIP 1.742
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.942 SNIP 1.544
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.813 SNIP 1.354
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.942 SNIP 1.489
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.842 SNIP 1.543
Scopus rating (2005): SJR 0.544 SNIP 1.357
Scopus rating (2004): SJR 0.753 SNIP 1.818
Scopus rating (2003): SJR 0.501 SNIP 1.152
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.481 SNIP 1.103
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.419 SNIP 0.85
Scopus rating (2000): SJR 0.694 SNIP 0.888
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Learning from participatory design projects across industries

Summative Statement: A preliminary framework for participatory design projects (PDP) was developed based on a retrospective analysis of five PDPs across different industries. The framework may serve as a guidance for planning and conducting PDPs.

Problem statement: A growing number of experiences with participatory design or participatory ergonomics projects have been gained within the field of macro-ergonomics. It is suggested that the Participatory Ergonomics Framework (PEF) validated by Haines et al. (2002) needs to be updated based on these experiences and hence more focused on design activities.

Research Objective / Question: The objective of this study was to update and design-orient the PEF based on experiences with PDPs within the last ten years.

Methodology: Five participatory design projects across different industries were systematically analyzed and compared in order to develop a framework pointing to supportive theory and practical guidance for ergonomics practitioners. The five PDPs were based in the following industries: construction, public service, food processing, and two healthcare projects. The starting point for the analysis was the notion of work systems meeting each other in the intervention into design projects by ergonomists/researchers.

Results: The nine dimensions and categories in the framework by Haines et al. (2002) are still relevant. However, they are not entirely oriented towards design projects and the framework do not include the dynamics between the ergonomist/researcher and the design activities going on in a company. It is suggested to add the following dimensions to the PEF: Involved work systems, type of interaction between the ergonomist work system and the company design work systems, transfer and integration of results from PDPs into the overall design project in the company.

Discussion: The proposed update of the PEF introduces a dynamic understanding of PDPs by the notion that PDP’s may be seen as interactions between different work systems, including those of the ergonomist/researcher, company designers, consultants, and technology suppliers. By an initial mapping the relevant work systems, the intervention by ergonomists may be better planned and better ensure a real impact on the overall design project. This is of importance because many PDPs have an intermittent and temporary character. The notion of interaction between different work systems also allows for theories on how ergonomists/researchers can impact design projects by facilitating participatory schemes.

Conclusions: This study suggested an updating of the PEF in order to include the dynamics between an ergonomist work systems with its own goals and rationale and a number of company work systems involved in design projects and having other goals and rationales. The updated framework are aimed at guidance in planning and conducting PDPs.

General information
State: Published
Organisations: Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems, Transport DTU
Authors: Broberg, O. (Intern), Souza da Conceição, C. (Intern)
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Source: PublicationPreSubmission
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Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Learnings from LCA-based methods: should chemicals in food packaging be a priority focus to protect human health?

Given the scale and variety of human health damage (HHD) caused by food systems, prioritization methods are urgently needed. In this study HHD is estimated for case studies on red meat and sugary sweetened beverages (SSB) packaged in high-impact polystyrene (HIPS) due to various relevant health impacts. Specifically, we aim to assess if chemicals in food packaging are important to HHD in a life cycle context. The functional unit is "daily consumption of a packaged food per person in the United States." Method developments focus on human toxicity characterization of chemicals migrating from packaging into food. Chemicals and their concentrations in HIPS were identified from regulatory lists. A new high-throughput model estimated migration into food, depending on properties of chemicals, packaging, food, and
scenario, and HHD was extrapolated following LCA characterization methods. An LCA-based study on the packaged foods estimated HHD from particulate matter and chemical emissions. Finally, the HHD of consumption of red meat and SSB above the minimum risk level was estimated using novel methods by Stylianou et al. 2016 based on the Global Burden of Disease studies. Results indicate that impacts caused by consumption of food items over minimum risk are high priority for mitigating HHD, as well as associated PM2.5 emissions from agriculture. Impacts due to the chemicals migrating from HIPS into food were minor given the study’s assumptions, limitations, and methods. However, calculating the HHD for migration levels at the legally allowable limits resulted in impacts three orders of magnitude greater than impacts from the assumed chemical concentrations, and thus a relevant contributor to HHD. Future work is required to quantify realistic exposure to chemicals in packaging and their potential effects in order to elucidate significance in a life cycle context. Understanding toxicity risks posed by simultaneous exposure to several chemicals at one time, all of which are below safety thresholds, requires cross-fertilization with risk and toxicity research. Lastly, the methods developed are a first step towards operationalizing LCA for practitioners to ensure that minimizing impacts on the environment and resources due to food packaging design choices do not lead to unintended health risks caused by chemicals in packaging, and vice versa that minimizing exposure to hazardous chemicals do not increase environmental damages.

**General information**

State: Published
Organisations: Quantitative Sustainability Assessment, Department of Management Engineering, University of Michigan, Quantis
Authors: Ernstoff, A. (Intern), Stylianou, K. S. (Ekstern), Fantke, P. (Intern), Dauriat, A. (Ekstern), Kounina, A. (Ekstern), Jolliet, O. (Ekstern)
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Electronic versions:
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Source: PublicationPreSubmission
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**Learning Supervised Topic Models for Classification and Regression from Crowds**

The growing need to analyze large collections of documents has led to great developments in topic modeling. Since documents are frequently associated with other related variables, such as labels or ratings, much interest has been placed on supervised topic models. However, the nature of most annotation tasks, prone to ambiguity and noise, often with high volumes of documents, deem learning under a single-annotator assumption unrealistic or unpractical for most real-world applications. In this article, we propose two supervised topic models, one for classification and another for regression problems, which account for the heterogeneity and biases among different annotators that are encountered in practice when learning from crowds. We develop an efficient stochastic variational inference algorithm that is able to scale to very large datasets, and we empirically demonstrate the advantages of the proposed model over state-of-the-art approaches.

**General information**

State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Coimbra
Authors: Rodrigues, F. (Intern), Lourenco, M. (Ekstern), Ribeiro, B. (Ekstern), Pereira, F. C. (Intern)
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
Additively manufactured (AM) injection molding (IM) inserts have proved to be capable to substitute conventionally manufactured metal inserts with polymer-based insert enforced with short, virgin, unseized carbon fibers (CFs). It has been shown that the implementation of AM technology resulted in significant improvements when investigating costs and cycle time for smaller part series. However, being a novel technology, AM inserts yield undesired characteristics, e.g. in terms of potential environmental impact because of the lower lifetime compared to metal inserts. Based on physical performance tests, this contribution provides a comparison of environmental performance of conventionally vs. additively manufactured inserts in a full life cycle perspective indicated in Figure 1, including materials, production, use and end-of-life (EoL) stages.

**General information**

**State:** Published  
**Organisations:** Department of Mechanical Engineering, Manufacturing Engineering, Department of Management Engineering, Quantitative Sustainability Assessment  
**Authors:** Hofstätter, T. (Intern), Stotz, P. M. (Intern), Bey, N. (Intern), Pedersen, D. B. (Intern), Tosello, G. (Intern), Hansen, H. N. (Intern)
Life cycle based dynamic assessment coupled with multiple criteria decision analysis: A case study of determining an optimal building insulation level

This work looks at coupling Life cycle assessment (LCA) with a dynamic inventory and multiple criteria decision analysis (MCDA) to improve the validity and reliability of single score results for complex systems. This is done using the case study of a representative Danish single family home over the service life of the building. This case study uses both the established and the coupled MCDA assessment methods to quantify and assess the balance of impacts between the production of mineral wool insulation versus the production of space heat. The use of TOPSIS method for calculating single scores is proposed as an alternative to the ReCiPe single score impact assessment method. Based on the single score impact values obtained from both of these methods, various insulation levels are ranked to determine an ideal insulation level and gauge the effectiveness of environmental impact reduction measures in current Danish building regulations. Using a comparison of the results from the two methods, a preferred choice of impact assessment method is determined. The findings show that if the midpoint impacts for a particular scenario are strongly correlated with a climate change impact indicator, it does not matter which impact assessment is applied. However, for the scenarios where other impact categories vary inversely or independently from the climate change impact indicator, such as with renewable energy production, there is need for a more unconventional method, such as the TOPSIS method, for calculating single score impacts.

General information

State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Roskilde University
Authors: Sohn, J. (Intern), Kalbar, P. (Intern), Birkved, M. (Intern)
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Web of Science (2017): Indexed yes
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Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.609 SNIP 2.383 CiteScore 5.57
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
There has been significant change in the way buildings are constructed and the way building energy performance is evaluated. Focus on solely the use phase of a building is beginning to be replaced by a life-cycle based performance assessment. This study assesses the environmental impact trade-offs between the heat produced to meet a building's space heating load and insulation produced to reduce its space heating load throughout the whole life-cycle of a building.

To obtain a more realistic valuation of this tradeoff, a dynamic heat production model, which accounts for political projections regarding change in Danish energy supply was used in the analysis. This novel approach of generating inventory for Life Cycle Assessment (LCA) helped to refine an understanding of optimal insulation levels. The findings of this study discourage the over-insulation of houses connected to the district heating grid, which is potentially promoted at present in Danish regulation. It is further concluded that improvement of the mineral wool insulation production process could allow for greater levels of environmentally beneficial insulation and would also help in reducing the overall environmental burden from insulating buildings.
Limitations of experiments performed in artificially made OECD standard soils for predicting cadmium, lead and zinc toxicity towards organisms living in natural soils

Development of comparative toxicity potentials of cationic metals in soils for applications in hazard ranking and toxic impact assessment is currently jeopardized by the availability of experimental effect data. To compensate for this deficiency, data retrieved from experiments carried out in standardized artificial soils, like OECD soils, could potentially be tapped as a source of effect data. It is, however, unknown whether such data are applicable to natural soils where the variability in pore water concentrations of dissolved base cations is large, and where mass transfer limitations of metal uptake can occur. Here, free ion activity models (FIAM) and empirical regression models (ERM, with pH as a predictor) were derived from total metal EC50 values (concentration with effects in 50% of individuals) using speciation for experiments performed in artificial OECD soils measuring ecotoxicological endpoints for terrestrial earthworms, potworms, and springtails. The models were validated by predicting total metal based EC50 values using backward speciation employing an independent set of natural soils with missing information about ionic composition of pore water, as retrieved from a literature review. ERMs performed better than FIAMs. Pearson's r for log10-transformed total metal based EC50s values (ERM) ranged from 0.25 to 0.74, suggesting a general correlation between predicted and measured values. Yet, root-mean-square-error (RMSE) ranged from 0.16 to 0.87 and was either smaller or comparable with the variability of measured EC50 values, suggesting modest performance. This modest performance was mainly due to the omission of pore water concentrations of base cations during model development and their validation, as verified by comparisons with predictions of published terrestrial biotic ligand models. Thus, the usefulness of data from artificial OECD soils for global-scale assessment of terrestrial ecotoxic impacts of Cd, Pb and Zn in soils is limited due to relatively small variability of pore water concentrations of dissolved base cations in OECD soils, preventing their inclusion in development of predictive models. Our findings stress the importance of considering differences in ionic composition of soil pore water when characterizing terrestrial ecotoxicity of cationic metals in natural soils.
Linking forms of inbound open innovation to a driver-based typology of environmental innovation: Evidence from French manufacturing firms

Environmental innovation research has not yet clarified how different forms of inbound innovation might exert effects. The current article proposes four driver-based EI types according to two main dimensions: compliance versus voluntary and own value capture versus customer value capture. With a problem-solving perspective, we develop links from different forms of inbound innovation to various types of EI and test the related hypotheses with two waves of the French Community Innovation Survey. On a short-term basis, R&D cooperation and technology acquisition correlate positively with all four types of EI, but over time, persistent R&D cooperation and technology acquisition are associated with EI only at the production stage, according to voluntary/strategic or compliance drivers. Inbound innovation enables quick responses to market demands for EI in the final use stage.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Technology and Innovation Management, University Savoie Mont Blanc, Luxembourg Institute of Socio-Economic Research (LISER)
Authors: Li-Ying, J. (Intern), Mothe, C. (Ekstern), Nguyen, T. T. U. (Ekstern)
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Linking risk and sustainability assessment to meet current and future challenges in circular economy, food safety, and consumer protection

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Fantke, P. (Intern)
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Publication: Research › Conference abstract in proceedings – Annual report year: 2017

Logical Entity Level Sentiment Analysis
We present a formal logical approach using a combinatory categorial grammar for entity level sentiment analysis that utilizes machine learning techniques for efficient syntactical tagging and performs a deep structural analysis of the syntactical properties of texts in order to yield precise results. The method should be seen as an alternative to pure machine learning methods for sentiment analysis, which are argued to have high difficulties in capturing long distance dependencies, and can be dependent on significant amount of domain specific training data. The results show that the method yields high correctness, but further investment is needed in order to improve its robustness.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Department of Management Engineering, Transport Modelling, Algorithms and Logic, Technical University of Denmark
Authors: Petersen, N. C. (Intern), Villadsen, J. (Intern)
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Logic without unique readability - a study of semantic and syntactic ambiguity
One of the main reasons for introducing a formal language is to remove ambiguity, the possibility of assigning several meanings to a linguistic expression. Typically, this is achieved through ensuring unique readability of formulas by using brackets (or another convention, such as Polish notation). Unique readability implies meaning uniqueness, exactly one valuation of a sentence given an interpretation of basic formulas and recursive truth conditions. Obviously, in natural language this one-to-one correspondence between syntax and semantics is absent, the unique readability assumption does not hold true universally. Whereas e.g. scope ambiguities in natural languages have been studied extensively, ambiguous formal languages have not been the focus of in depth research. Here, we lift the assumption of unique readability by omitting the brackets from propositional
logic, making it possible to formally distinguish between syntactic and semantic ambiguity. A valuation then amounts to a semantic disambiguation, and rather than a unique valuation (truth value), there is a set of valuations corresponding to ways a formula could have been constructed. We show what happens to familiar concepts of logic such as definability, satisfiability and validity. Here follows two simple examples illustrating the relation between syntactic and semantic ambiguity. In some cases unique readability can be regained through careful construction of formulas. E.g., although an attempt to define \( p \rightarrow q \) as \( \neg p \lor q \) would be syntactically and semantically ambiguous, one may define it as \( q \lor \neg p \), which can be read only one way (but obviously this construction is not stable under substitution). Syntactic ambiguity does not imply semantic ambiguity, although it is typically the case. For instance, although the formula \( p \land \neg p \land p \) can be read in three ways, it has only one possible meaning (a contradiction).

**Low Cost and Flexible UAV Deployment of Sensors**

This paper presents a platform for airborne sensor applications using low-cost, open-source components carried by an easy-to-fly unmanned aircraft vehicle (UAV). The system, available in open-source, is designed for researchers, students and makers for a broad range of exploration and data-collection needs. The main contribution is the extensible architecture for modularized airborne sensor deployment and real-time data visualisation. Our open-source Android application provides data collection, flight path definition and map tools. Total cost of the system is below 800 dollars. The flexibility of the system is illustrated by mapping the location of Bluetooth beacons (iBeacons) on a ground field and by measuring water temperature in a lake.
In a configuration system, we use the computers to store, examine, retrieve, and manipulate data related to products, demands and processes. The main consequences are fewer expenses for the customers and more revenue for producers.
Managing cyber-risk and security in the global supply chain: a systems analysis approach to risk, structure and behaviour

The threat of cyber-attacks continues to grow and disrupt global supply chains, exposing companies to disruptions that severely affect or completely halt normal operations. This impacts business performance negatively through the company’s bottom line and reputation, even resulting in long-term legal ramifications. As a result, little information about attacks and their consequences is published. Supply chains continue to prepare for cyber-attacks through a mix of traditional risk and resilience frameworks, protecting their networks through patches, firewalls and antiviruses, or financially through insurance. Yet these approaches are not giving the expected results, as reflected by the steady increase in disruptions from cyber-attacks. This thesis investigates and proposes tools for managing cyber-risks in the supply chain, derived from an analysis that follows three main steps. In step one, existing knowledge about supply chain cyber-resilience is analysed through a systematic literature review, and gaps are identified. Two of the identified gaps are addressed in detail, 1) insufficient understanding of the particular characteristics cyber-risks and how these compare to other supply chain risks for effective risk management, and 2) insufficient address by current methods to aspects of compartmentalization, static focus and history-dependence in the management of supply chain cyber-risk and cyber-resilience. Step two of this thesis explores the first gap by identifying the particular characteristics of cyber-risks from cyber-attack report data. Finally in step three methods based on systems thinking are applied to case studies to evaluate the degree to which these methods address compartmentalization, dynamics and history dependency in their application to the management of cyber-risk and cyber-resilience. The findings of the research are in three main domains. First, the research reveals relevant gaps in the traditional methods available for the management of cyber risks, in areas such as their consideration of dynamic behaviour, inadequate or difficult reporting of events, their dependence on historical data to manage unknown or new attacks, and a silo-approach for managing a problem that is cross-disciplinary. Second, relevant differences between cyber-risks and other supply chain risks are identified, in areas such as the capacity of disruptions from cyber risks to go undetected, the high reproduction fidelity of cyber-risks, the capacity of cyber risks to affect different geographical locations simultaneously, and the complexity of cyber-attacks. Finally, the research reveals that the novel use of methods based in systems thinking for managing cyber-risks at the same time address gaps found in traditional methods, and provide a foundation for thinking about cyber-risks as the result of incomplete requirements to the supply chain design. This change in focus could allow supply chains to minimize losses by preparing the system for reaction to whatever cyber-risk leads to an operational disruption. The findings of the research have both industrial implications. The industrial implications suggest supply chains can benefit from designing the behaviours they require through cross-disciplinary, simulation-based techniques. The academic implications suggest that researchers will benefit from 1) adjusting reporting times to match the quick development cycle of cyber-attacks, 2) consolidating a cross-disciplinary cyber-risk and resilience research community, and 3) expanding existing research methods by integrating dynamic systems thinking into data gathering and analysis.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Transport DTU, Operations Management
Authors: Sepúlveda Estay, D. A. (Intern)
Number of pages: 620
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Main Research Area: Technical/natural sciences
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Projects:
Managing cyber-risk and security in the global supply chain: a systems analysis approach to risk, structure and behaviour
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Source-ID: 146599845
Publication: Research › Ph.D. thesis – Annual report year: 2018
Managing innovation processes through value co-creation: a process case from business-to-business service practise

Value co-creation is a specific type of collaboration that is considered to be an innovative and interactive process between end users and organisations; it aims to increase the value of a product or service. This study investigates how a network of stakeholders collaborating to manage innovation openly co-creates value over time; it contributes to the existing literature on value co-creation by taking the perspective of the network as a whole. The study follows a case in which value co-creation unfolds over time across a network of stakeholders within the business-to-business facility service context. The in-depth longitudinal investigation of a network composed of a corporate customer and its external facility service providers revealed that a network of stakeholders co-creates value over time by 1) offering an adaptable structure for the network to organise innovation activities and establish support routines, 2) facilitating interactions to support stakeholder relation development and 3) allowing participants to achieve self-empowerment. Therefore, stakeholder value co-creation entails the combination of single value co-creation activities and overarching network progressions that allow for learning and inter-organisational trust among stakeholders.

General information
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Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Salzburg University of Applied Science
Authors: Nardelli, G. (Intern), Broumels, M. (Ekstern)
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Web of Science (2017): Indexed yes
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Scopus rating (2016): CiteScore 1.25 SJR 0.57 SNIP 0.876
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.41 SNIP 0.797 CiteScore 1.17
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.536 SNIP 0.629 CiteScore 1.25
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.44 SNIP 0.502 CiteScore 1
ISI indexed (2013): ISI indexed no
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.439 SNIP 0.63 CiteScore 0.98
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.647 SNIP 0.965 CiteScore 1.43
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.32 SNIP 0.717
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.166 SNIP 1.081
BFI (2008): BFI-level 1
Original language: English
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Source-ID: 134463252
Publication: Research - peer-review › Journal article – Annual report year: 2017
Market Prices in a Power Market with more than 50% Wind Power

Denmark has the highest proportion of wind power in the world. Wind power provided a world record of 39.1% of the total annual Danish electricity consumption in 2014 with as much as 51.7% in Western Denmark. Many would argue that the present power markets are not designed for such high shares of wind power production and that it would be hard to get good and stable prices. However, analyses in this chapter show that the Nordic power market works, extreme events have been few, and the current infrastructure and market organization has been able to handle the amount of wind power installed so far. It is found that geographical bidding areas for the wholesale electricity market reflect external transmission constraints caused by wind power. The analyses in this chapter use hourly data from West Denmark—which has the highest share of wind energy in Denmark and which is a separate price area at the Nordic power exchange. Data have been collected from the last ten years and periods with extreme wind conditions are used as case studies to illustrate the robustness of our findings.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Skytte, K. (Intern), Grohnheit, P. E. (Intern)
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Title of host publication: Electricity Markets, Renewable Generation and Software Agents: Traditional and Emerging Market Designs
Series: Studies in Systems, Decision and Control
Main Research Area: Technical/natural sciences

Mathematical Programming Approaches for Optimal University Timetabling

Every semester universities are faced with the challenge of creating timetables for the courses. Creating these timetables is an important task to ensure that students can attend the courses they need for their education. Creating timetables that are feasible can be challenging, and when different preferences are taken into account, the problems become even more challenging. Therefore, automating the processes of generating these timetables is a great help for the planners and the universities. Scheduling and timetabling has been studied before in the literature, and two international conferences are dedicated to this research field. This thesis considers a University Timetabling problem, more specifically the Curriculum based Course Timetabling (CTT) problem. The objective of the CTT problem is to assign a set of lectures to time slots and rooms. The literature has focused mainly on heuristic applications which are also apparent in the different surveys. The drawback of the heuristics is that they are problem specific and do not provide any information on the quality of the solutions they generate. The objective of this thesis is to minimize the gap between the best-known upper bounds and the best-known lower bounds for CTT by using Mixed Integer Programming (MIP) based approaches. We present a total of 15 different MIP based approaches that we have implemented, ranging from Cutting Plane techniques and Lagrangian Relaxation to Benders' Decomposition and Dantzig-Wolfe Decomposition. Most of these implementations did not provide satisfying results. However, they provide valuable insights into the difficulties of the problem. We discuss all the approaches, the difficulties we have encountered, and suggestions on how to bring research further. Four of the implementations have led to articles submitted to international peer-reviewed journals. The first two articles focus on exact methods and extend each other. The last two focus on generating high-quality lower bounds by applying an extended formulation, which is then decomposed. The articles in this thesis have brought us closer to the goal of closing the gap between the best-known upper and lower bounds for CTT. Though CTT was the problem in focus, the methods implemented here are general enough to be applied for other scheduling problems as well.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, MaCom A/S
Authors: Bagger, N. F. (Intern), Stidsen, T. J. R. (Intern), Sørensen, M. (Ekstern)
Number of pages: 191
Publication date: 2017

Publication information
Publisher: Department of Management Engineering, Technical University of Denmark
Original language: English
Main Research Area: Technical/natural sciences
Maturity model for strategic collaboration in sustainable building renovation

To enable the construction industry to execute sustainable renovation projects which entails a reduction in use of resources, an increase in productivity and a more socially sustainable construction process, new tools are needed. A maturity model can be a simple and effective tool for a company to evaluate the quality of a process and in recent years a number of maturity models have been proposed to evaluate the construction industry. The construction industry has seen a trend in the last couple of decades towards a higher level of integration of the supply chain and strategic collaboration can now be found in several countries. A maturity model has been synthesized from the examples and experiences of the construction industry based on, interviews, workshops and case studies, to further develop the potential within strategic collaboration. The maturity model can potentially be used as a research tool to analyse why some strategic collaborations are successful and others not. With the model companies in the construction industry are able to make an assessment of their own development potential regarding strategic collaboration and be guided in their further development.

Measures for diffusion of solar PV in selected African countries

This paper investigates how African governments are considering supporting and promoting the diffusion of solar PV. This issue is explored by examining so-called 'technology action plans (TAPs)', which were main outputs of the Technology Needs Assessment project implemented in 10 African countries from 2010 to 2013. The paper provides a review of three distinct but characteristic trajectories for PV market development in Kenya (private-led market for solar home systems), Morocco (utility-led fee-for service model) and Rwanda (donorled market for institutional systems). The paper finds that governments’ strategies to promoting solar PV are moving from isolated projects towards frameworks for market development and that there are high expectations to upgrading in the PV value chain through local assembly of panels and local production of other system elements. Commonly identified measures include support to: local production; financing schemes; tax exemptions; establishment and reinforcement of standards; technical training; and research and development.
Measuring and increasing the sustainability of biochemicals: contrasting feedstock’s, biorefinery processes, and upscaling
Metacognition in Creativity: Process Awareness Used to Facilitate the Creative Process

The purpose of this study was to investigate the influence of 'process awareness' on the creative process of a design team. Process awareness is a cognitive creativity skill which entails actions derived from instances where individuals in the design team express knowledge of underlying cognitive processes and -aspects and utilize it to facilitate their own- and their team's creative process. Transcripts from sessions where the design team was working creatively were analyzed both top-down and bottom-up, through quantitative coding, using a coding scheme, and qualitative coding. This was done to ensure capture of all instances of process awareness. Through this iterative process it was revealed that process awareness was predominantly observed in creativity related tasks. Moreover three distinct facets to process awareness emerged; planning, monitoring and reflecting, which were employed respectively before, during and after initiating a process and/or a workshop. We conclude that process awareness is an important creativity skill, being a crucial mechanism to enhance all stages of the creative process. If a designer becomes able to plan, monitor and reflect on his or her own cognitive processes, as well as other team members, he or she will be able to understand what works and what does not for advancing the creative process. In turn, that enables the designer to become more strategic about which actions are appropriate and at what time they are most usefully deployed; making the use of strategies, methods and tools not just an automatic procedure but a highly conscious and purposeful one.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Valgeirsdóttir, D. (Intern), Onarheim, B. (Intern)
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Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Metal toxicity characterization factors for marine ecosystems: considering the importance of the estuary for freshwater emissions

The study develops site-dependent characterization factors (CFs) for marine ecotoxicity of metals emitted to freshwater, taking their passage of the estuary into account. To serve life cycle assessment (LCA) studies where emission location is often unknown, site-generic marine CFs were developed for metal emissions to freshwater and coastal seawater, respectively. The new CFs were applied to calculate endpoint impact scores for the same amount of metal emission to each compartment, to compare the relative ecotoxicity damages in freshwater and marine ecosystems in LCA.

Site-dependent marine CFs for emission to freshwater were calculated for 64 comparatively independent seas (large marine ecosystems, LMEs). The site-dependent CF was calculated as the product of fate factor (FF), bioavailability factor (BF), and effect factor (EF). USEtox modified with site-dependent parameters was extended with an estuary removal process to calculate FF. BF and EF were taken from Dong et al. Environ Sci Technol 50:269–278 (2016). Site-generic marine CFs were derived from site-dependent marine CFs. Different averaging principles were tested, and the approach representing estuary discharge rate was identified as the best one. Endpoint marine and freshwater metals CFs were developed to calculate endpoint ecotoxicity impact scores.

Marine ecotoxicity CFs are 1.5 orders of magnitude lower for emission to freshwater than for emission to seawater for Cr, Cu, and Pb, due to notable removal fractions both in freshwater and estuary. For the other metals, the difference is less than half an order of magnitude, mainly due to removal in freshwater. The site-dependent CFs generally vary within two orders of magnitude around the site-generic CF. Compared to USES-LCA 2.0 CFs (egalitarian perspective), the new site-generic marine CFs for emission to seawater are 1–4 orders of magnitude lower except for Pb. The new site-generic marine CFs for emission to freshwater lie within two orders of magnitude difference from USES-LCA 2.0 CFs. The comparative contribution share analysis shows a poor agreement of metal toxicity ranking between both methods.
Accounting for estuary removal particularly influences marine ecotoxicity CFs for emission to freshwater of metals that have a strong tendency to complex-bind to particles. It indicates the importance of including estuary in the characterization modelling when dealing with those metals. The resulting endpoint ecotoxicity impact scores are 1–3 orders of magnitude lower in seawater than in freshwater for most metals except Pb, illustrating the higher sensitivity of freshwater ecosystems to metal emissions, largely due to the higher species density there.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Irstea
Authors: Dong, Y. (Intern), Rosenbaum, R. K. (Ekstern), Hauschild, M. Z. (Intern)
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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.43 SJR 1.328 SNIP 1.423
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
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Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.736 SNIP 1.738 CiteScore 3.65
Web of Science (2014): Indexed yes
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Scopus rating (2013): SJR 1.666 SNIP 1.979 CiteScore 3.35
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BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.515 SNIP 1.701 CiteScore 2.89
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Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.581 SNIP 1.716 CiteScore 2.82
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Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.447 SNIP 1.861
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.201 SNIP 1.592
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.863 SNIP 1.33
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.8 SNIP 1.22
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.6 SNIP 1.387
Web of Science (2006): Indexed yes
Migration modeling to estimate exposure to chemicals in food packaging for application in high-throughput risk-based screening and Life Cycle Assessment

Specialty software and simplified models are often used to estimate "worst-case" migration of potentially toxic chemicals from packaging into food. Current approaches, however, cannot efficiently and accurately provide estimates of migration for emerging applications, e.g. in Life Cycle Assessment and risk prioritization and screening. To fulfill the need for a migration model flexibly suitable for such tools, we develop an accurate and rapid (high-throughput) approach. The developed model estimates the fraction of an organic chemical migrating from polymeric packaging into food for user-defined scenarios and requires limited parameters (i.e. physicochemical properties). Several hundred step-wise simulations optimized the coefficients of the model to cover a wide-range of scenarios (e.g. packaging thickness, food etc.). The developed model, implemented in a disseminatable spreadsheet, nearly instantaneously estimates migration from packaging into food for user-defined scenarios, and has improved performance over common model simplifications. The common practice of setting the package-food partition coefficient = 1 for specific "worst-case" scenarios is insufficient to predict the equilibrium concentration in food for diverse scenarios. Therefore a partition coefficient model, as a function of a chemical's octanol-water partition coefficient and a food's ethanol-equivalency, was also developed. When using measured diffusion coefficients the model accurately predicted (R^2 = 0.9, SE = 0.5) hundreds of empirical datapoints for various scenarios. Diffusion coefficient modeling, which determines the speed of chemical transfer from package to food, was found as a major contributor to uncertainty and decreased model performance (R^2 = 0.5, SE = 1). In all, this study provides a migration modeling approach that rapidly estimates the fraction migrated for emerging screening and prioritization approaches. To estimate exposure, chemical concentrations in packaging are essential.
Model-based corridor performance analysis – An application to a European case

The paper proposes a methodology for freight corridor performance monitoring that is suitable for sustainability assessments. The methodology, initiated by the EU-funded project SuperGreen, involves the periodic monitoring of a standard set of transport chains along the corridor in relation to a number of Key Performance Indicators (KPIs). It consists of decomposing the corridor into transport chains, selecting a sample of typical chains, assessing these chains through a set of KPIs, and then aggregating the chain-level KPIs to corridor-level ones using proper weights. A critical feature of this methodology concerns the selection of the sample chains and the calculation of the corresponding weights. After several rounds of development, the proposed methodology suggests a combined approach involving the use of a transport model for sample construction and weight calculation followed by stakeholder refinement and verification. The sample construction part of the methodology was tested on GreCOR, a green corridor project in the North Sea Region, using the Danish National Traffic Model as the principal source of information for both sample construction and KPI estimation. The results show that, to the extent covered by the GreCOR application, the proposed methodology can effectively assess the performance of a freight transport corridor. Combining the model-based approach for the sample construction and the study-based approach for the estimation of chain-level indicators exploits the strengths of each method and avoids their weaknesses. Possible improvements are also suggested by the paper.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management, Transport DTU
Authors: Panagakos, G. (Intern), Psaraftis, H. N. (Intern)
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Main Research Area: Technical/natural sciences
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Journal: European Journal of Transport and Infrastructure Research
Volume: 17
Issue number: 2
ISSN (Print): 1567-7141
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BFI (2018): BFI-level 2
Modeling rational, psychological, and social behavior toward diffusion of new technology using agent-based simulation: the case of the public utility jeepney (PUJ) fleet in Metro Manila

In most developing countries, over-aged vehicles play a significant role in energy demand and air pollution, which make the transportation sector a suitable choice for investigating opportunities to mitigate climate change. Apparently, people heterogeneity, social influence, and network configuration affect diffusion of innovation. This study presents an agent-based model (ABM) to simulate the rational decision-making, psychological behavior, and social interaction of people to explore their reaction to policy scenarios toward adopting technological changes over time. The aim of model is to assist policymakers for energy and environmental policy design based on consumers' behavior. The jeepney owners in the old public utility jeepney (PUJ) fleet in Metro Manila are chosen as case study to prove the applicability of the model. The results show that rational, psychological, and social interaction of owners could not lead to diffusion of technology without intervention of policy instruments. However, by implementing incentive-based policies, the entire jeepney fleet could be renovated before the end of simulation horizon and the government could launch a 5-year plan to combat pollution of the fleet. The model could be applied to evaluate and prioritize strategies for reducing the future energy requirements and emissions in other fleets and regions.
Modelling production-consumption flows of goods in Europe: the trade model within Transtools3

The paper presents a new model for trade flows in Europe that is integrated with a logistics model for transport chain choice through Logsum variables. Logsums measures accessibility across an entire multi-modal logistical chain, and are calculated from a logistics model that has been estimated on disaggregated micro data and then used as an input variable in the trade model. Using Logsums in a trade model is new in applied large-scale freight models, where previous models have simply relied on the distance (e.g. crow-fly) between zones. This linkage of accessibility to the trade model makes it possible to evaluate how changes in policies on transport costs and changes in multi-modal networks will influence trade patterns. As an example the paper presents outcomes for a European-wide truck tolling scenario, which showcases to which extent trade is influenced by such a policy. The paper discusses how such a complex model can be estimated and considers the choice of mathematical formulation and the link between the trade model and logistics model. In the outcomes for the tolling scenario we decompose the total effects into effects from the trade model and effects from the...
Modelling the influence of changing climate in present and future marine eutrophication impacts from spring barley production

Nitrate concentration and runoff are site-specific and driven by climatic factors and crop management. As such, nitrate emissions may increase in the future due to climate change, affecting the marine eutrophication mechanism. In this context, and considering the case of spring barley production in Denmark, the paper has two objectives: (i) to estimate the present and future marine eutrophication impacts by combining a novel Life Cycle Impact Assessment (LCIA) modelling approach with a quantification of the effects of climate change on its parameterisation, and (ii) to discuss the implications of different normalisation references when comparing future Life Cycle Assessment (LCA) scenarios with current production systems. A parameterised characterisation model was developed to gauge the influence of future climatic-driven pressures on the marine eutrophication impact pathway. Spatial differentiation was added to the resulting ‘present’ and ‘future’ characterisation factors (CFs) and calculated for the Baltic and North Sea. The temporal variability of both midpoint normalised impact scores and damage scores reflect a 34% and 28% increase of the CFs in the North Sea and Baltic Sea, respectively. The temporal variability is mostly explained by CF variation and increasing future nitrogen flows. The marine eutrophication indicator scores at both midpoint and damage levels suggest that the differentiation of impacts to various receiving (and potentially perturbed) ecosystems is relevant. Damage scores are quantified with a factor 2.5 and 2.3 differentiation between the Baltic (higher) and North Seas (lower) for the present and future scenarios, respectively. The comparison of the normalisation methods, either based on total annual impacts (domestic inventory of background interventions), on ecological carrying capacity, or on the presently proposed method, point to the value of adding spatial differentiation to LCIA models. The inclusion of time variation and spatial differentiation in characterisation modelling of marine eutrophication and the identification of a paucity of adequate inventory data for future scenario analysis constitute the main outcomes of this study. Further research should aim at reducing the uncertainty of the parameterisation under future conditions and strengthening emissions projections.

General information
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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Cosme, N. M. D. (Intern), Niero, M. (Intern)
Pages: 537-546
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Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Cleaner Production
Volume: 140
ISSN (Print): 0959-6526
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
Models and Methods for the Design and Support of Liner Shipping Networks

The modern economy relies on cheap and reliable transportation of goods all around the globe. Liner shipping networks represent an important link in the global supply chain, as they connect countries and continents over long distances at
comparatively low transportation costs. In largeline shipping networks, several hundred container vessels operate more than a hundred shipping routes. The individual routes are linked through ports, where containers can be loaded, unloaded but also be transshipped between shipping routes. The resulting networks constitute inherently complex systems. In this thesis we present mathematical modeling and optimization tools that help decision makers in the liner shipping industry to find solutions to complex decision problems. The decision problems we address involve questions like: Which ports shall be covered by the network? How shall each single shipping route be designed to achieve a well-connected but cost-efficient network? How shall port calls be scheduled and synchronized between shipping routes to offer the most economical and fastest transportation between ports? On which route shall containers be transported, if multiple options exist? The articles in this thesis contribute to the field of Operations Research with application in maritime optimization. More particularly, the first two articles present models and solution methods to (re-)design and (re-)schedule large liner shipping networks. The articles combine and substantially extend modeling features of previous contributions and narrow the gap to the economic and operational reality of liner shipping. The results obtained from solving the models shed light on previously unexamined issues. The developed solution algorithms cannot only handle the increased complexity inherent to the models, but improve over existing methods proposed in the literature. The third article addresses a strategic infrastructure and tanker fleet sizing problem as part of an industrial case study with a large liner shipping company. The case study is motivated by recent changes in environmental regulations that may substantially change the way liner vessels are operated in the future. The article addresses the establishment of a large-scale liquefied natural gas supply chain along a major trade lane. It analyzes the interaction between long-term investment and operational costs, derives basic decision rules and evaluates the robustness of the solutions.

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Organisations: Department of Management Engineering, Management Science, Transport DTU, Operations Research
Authors: Koza, D. F. (Intern)
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Source-ID: 146844016
Publication: Research › Ph.D. thesis – Annual report year: 2018

Modularising design processes of façades in Denmark: re-exploring the use of design structure matrix
Modularity has shown great potential in the manufacturing industry, reducing order lead time and creating variety with limited resources. In the construction industry, the implementation of modularity has been limited to off-site production (OSP). The construction design process incorporates a substantial number of disciplines and stakeholders. Moreover, in the application OSP, the design phase is critical due to the necessity of freezing the design early in the process. This study explores the opportunities for optimising the design processes for OSP through the application of modularity. Framed by a large general contractor, the research is based on a case study of façade design, which is representative of design processes for OSP. Research is based on a theoretical framing within design management and modularity, combined with empirical material from 20 interviews and a two-hour-long workshop with a cross-functional design team. The findings were that (1) the application of a modularity perspective in design has the advantage of accelerating the execution process, as the workload and coordination are transferred to the design process, which, in turn, requires enhanced design management. (2) The design structure matrix (DSM), an approach for operationalising modularity theory, is a promising tool for planning and scheduling complex design processes. The DSM method successfully enabled the identification of dependencies and interfaces between the crucial cross-organisational design activities that are related to the façade design process. (3) The developed process modules are helpful to visualise and execute the process for both project participants and managers.

General information
State: Published
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Main Research Area: Technical/natural sciences
Multi-terminal Offshore Grid for the North Sea Region for 2030 and 2050 Scenarios

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Authors: Koivisto, M. J. (Intern), Sørensen, P. E. (Intern), Maule, P. (Intern), Traber, T. (Intern)
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Multi-terminal Offshore Grid for the North Sea Region for 2030 and 2050 Scenarios
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Myopic loss aversion in the response of electric vehicle owners to the scheduling and pricing of vehicle charging

Upward expectations of future electric vehicle (EV) growth pose the question about the future load on the electricity grid. While existing literature on EV charging demand management has focused on technical aspects and considered EV-owners as utility maximizers, this study proposes a behavioural model incorporating psychological aspects relevant to EV-owners facing charging decisions and interacting with the supplier. The behavioural model represents utility maximization under myopic loss aversion (MLA) within an ultimatum game (UG) framework where the two players are the EV-owner and the electricity supplier. Experimental economics allowed testing the validity of the behavioural model by designing three experiments where a potential EV-owner faces three decisions (i.e., to postpone EV charging to off-peak periods for a discount proposed by the supplier, the amount of discount to request for off-peak charging at times decided by the supplier, and the amount of discount to accept for supplier-controlled charging) under two contract durations (i.e., short-term, long-term). Findings from the experiments show that indeed potential EV-owners perform charging decisions while being affected by MLA resulting from monetary considerations and the UG participation, and that presenting long-term contracts help potential EV-owners to curtail MLA behaviour and minimise cost even though the assumption of utility maximization is violated. (C) 2016 Elsevier Ltd. All rights reserved.

The growing share of variable renewable energy (VRE) is expected to increase the need for flexibility in the energy systems in many countries. VRE generation is highly variable because it is determined by weather conditions. The geographical distribution of installed wind generation affects the probability distribution (PD) of the aggregate generation, including the probabilities of very low or high generation. A combined modelling of wind and solar power has been presented in. Here, a combined analysis of wind and solar power in multiple Nordic and Baltic countries is presented. The analysed scenarios are the baseline scenarios from.

Variable renewable energy generation is analysed using the CorWind tool developed at DTU Wind Energy. In addition to analysing VRE generation, the variability of net load (electricity consumption subtracted by VRE generation) is analysed. Compared to 2014, the relative variability in VRE generation decreases in the future scenarios, as the overall geographical dispersion of the installed VRE generation increases. The correlation between solar and wind generation is generally slightly negative, which can reduce the variability of the aggregate generation compared to only having wind generation in the VRE generation mix (however, the installed solar generation capacities in the analysed scenarios are low, so this effect is small).

Figure 1 shows the probability distribution functions (PDFs) of the aggregate net load in the different scenarios. The standard deviation (STD) of the hourly net load increases notably in 2050 (22% higher than in 2014). At the same time, the expected value of the net load decreases. Thus, there will be less energy to be generated by the other generation types, such as hydro power, while the need for flexibility increases. Alternatively, the variability in the net load can be managed by demand-side response, transmission of power to or from surrounding countries or by storing energy.

With more VRE generation installed, the probability of very high net load decreases (as some VRE generation is usually available during peak consumption). However, there is always some probability that the aggregate VRE generation is zero, so the highest possible net load is determined by peak consumption. This may raise questions considering the incentives to hold enough other generation capacity to meet the rare peak net load. Compared to the hourly ramp rates in consumption, the increasing VRE generation increases the ramp rates in the aggregate net load only moderately in the future scenarios; STD of the net load ramp rate in 2050 is expected to be 14% higher than in 2014. However, while ramp rates in consumption happen usually at well-known times (i.e., ramping up in working day mornings), the hourly changes in VRE generation are less predictable.

General information

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Organisations: Department of Wind Energy, Integration & Planning, Department of Management Engineering, Systems Analysis
Authors: Koivisto, M. J. (Intern), Sørensen, P. E. (Intern), Maule, P. (Intern), Nuño Martinez, E. (Intern), Traber, T. (Intern)
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Organisations: Department of Wind Energy, Integration & Planning, Department of Management Engineering, Systems Analysis
Authors: Koivisto, M. J. (Intern), Sørensen, P. E. (Intern), Maule, P. (Intern), Nuño Martinez, E. (Intern), Traber, T. (Intern)
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Neighbourhood inequalities in the geography of burglary clear up rates

General information
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Organisations: Department of Management Engineering, Systems Analysis, DTU Climate Centre
Authors: Anderson, T. K. (Intern)
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.7 SJR 1.106 SNIP 1.378
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.955 SNIP 1.212 CiteScore 1.54
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.427 SNIP 0.569 CiteScore 0.73
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.033 SNIP 1.266 CiteScore 1
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.656 SNIP 1.08 CiteScore 0.79
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.586 SNIP 1.618 CiteScore 0.82
BFI (2010): BFI-level 1
**Neural network-based survey analysis of risk management practices in new product development**

The current study investigates the applicability of Artificial Neural Networks (ANNs) to analyse survey data on the effectiveness of risk management practices in product development (PD) projects, and its ability to forecast project outcomes. Moreover, this study presents the relations between risk management factors affecting the success of a PD project, such as cost. ANNs were chosen due to the fact that hidden inherent relations can be revealed through this type of quantitative analysis. Flexibility in terms of analysis and adaptability on the given dataset are the great advantages of Artificial Neural Networks. Dataset used is a filtered survey of 291 product development programs. Answers of this survey are used as training input and target output, in pattern recognition two-layer feed forward networks, using various transfer functions. Using this method, relations among 6 project practices and 13 outcome metrics were revealed. Results of this analysis are compared with existent results made through statistical analysis in prior work of one of the authors. Future investigation is needed in order to tackle the lack of data and create an easy to use platform for industrial use.

**New insights into the stochastic ray production frontier**

The stochastic ray production frontier was developed as an alternative to the traditional output distance function to model production processes with multiple inputs and multiple outputs. Its main advantage over the traditional approach is that it can be used when some output quantities of some observations are zero. In this paper, we briefly discuss—and partly refute—a few existing criticisms of the stochastic ray production frontier. Furthermore, we discuss some shortcomings of the stochastic ray production frontier that have not yet been addressed in the literature and that we consider more important than the existing criticisms: taking logarithms of the polar coordinate angles, non-invariance to units of measurement, and ordering of the outputs. We also give some practical advice on how to address the newly raised issues.
New Model for FM and Added Value by FM and CREM

General information
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Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Delft University of Technology
Authors: Jensen, P. A. (Intern), van der Voordt, T. (Ekstern)
Pages: 41-47
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Main Research Area: Technical/natural sciences

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New vigour involving statisticians to overcome ensemble fatigue

Climate simulation data comprise a range of different phenomena with complex and interacting processes. Yet our understanding of the climate is incomplete despite the huge volumes of data, of which only a small fraction has been explored, and many questions remain, particularly those on the character and origin of uncertainties associated with model simulations and how further modelling efforts can improve understanding. Here, we question whether climate model information could be used more effectively and how so-called ‘ensembles of opportunity’ should be interpreted. Statisticians can contribute substantially to designing ‘smarter’ ensemble experiments, improving the distillation of information from ensembles, and helping interpret the relative merits of additional simulations. Future progress may be enhanced by increasing collaborations with statisticians.
Normalisation and weighting in life cycle assessment: quo vadis?

Purpose: Building on the rhetoric question "quo vadis?" (literally "Where are you going"?), this article critically investigates the state of the art of normalisation and weighting approaches within life cycle assessment. It aims at identifying purposes, current practises, pros and cons, as well as research gaps in normalisation and weighting. Based on this information, the article wants to provide guidance to developers and practitioners. The underlying work was conducted under the umbrella of the UNEP-SETAC Life Cycle Initiative, Task Force on Cross-Cutting issues in life cycle impact assessment (LCIA).

Methods: The empirical work consisted in (i) an online survey to investigate the perception of the LCA community regarding the scientific quality and current practice concerning normalisation and weighting; (ii) a classification followed by systematic expert-based assessment of existing methods for normalisation and weighting according to a set of five criteria: scientific robustness, documentation, coverage, uncertainty and complexity. Results and discussion: The survey results showed that normalised results and weighting scores are perceived as relevant for decision-making, but further development is needed to improve uncertainty and robustness. The classification and systematic assessment of methods allowed for the identification of specific advantages and limitations. Conclusions: Based on the results, recommendations are provided to practitioners that desire to apply normalisation and weighting as well as to developers of the underlying methods.
This report introduces the set of basic data to define scenarios with realistic yet ambitious targets for offshore wind power development in the North Sea to be used in the NSON-DK project. The assumptions are in line with those of IEA for a two degree temperature increase scenario and correspond with a strong recovering of coal and crude oil prices, and a pronounced increase of CO2 prices from 2020. For the countries around the North Sea that are considered, the evolution of electricity demand is projected to be strongly impacted by aggressive energy efficiency policies that lead in total to stagnating consumption despite substantial electric vehicle up-take. To the contrary, Denmark is assumed to substantially increase its consumption, i.e. by 14% from 2020 to 2050. However, the Danish electricity system is looking forward to a decommissioning of the remaining coal fired power plants towards the mid of the century and replacing these capacities essentially with natural gas power plants. In Belgium, and Germany nuclear power plants are expected to be phased-out by 2035, with Sweden following this policy by 2050. Moreover, the economic outlook for nuclear in the other countries is also weak mainly due to pronounced competition from fluctuating renewable energies. In regard to wind energy, for Denmark it is suggested that onshore installations are not increased significantly after 2030. By contrast, a major increase in offshore wind energy is assumed. Corresponding with these offshore and onshore wind power developments, the proposed NSON-DK scenario projects at least 8 TWh higher expected annual wind generation for Denmark. Given the pronounced increases of offshore wind farms, the installations are expected to form significant clusters from 2030 onwards with particularly strong developments in the British Hornsea and on the Dogger Bank.
Ny model for FM og merværdi

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Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Jensen, P. A. (Intern)
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Ny undersøgelse: aggressionsniveauet er lavere blandt motorcykler
En ny australisk undersøgelse har set på, om det har betydning for trafikanters aggressionsniveau, hvilket køretøj de benytter. Undersøgelsen viser, at køretøjet påvirker aggressionsniveauet, idet deltagerne var mindre tilbøjelige til at udvise aggression som motorcyklist end som bilist. Undersøgelsen viser endvidere, at der både er ligheder og forskelle med hensyn til, hvilke faktorer der påvirker aggressionsniveauet for de to køretøjstyper.

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Authors: Møller, M. (Intern)
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http://www.trafiksikkerhedsforskning.dtu.dk/arkiv/nr-38/aggression-og-motorcykler
Publication: Communication › Newspaper article – Annual report year: 2017
On the boundary between economy and environment in life cycle assessment

Purpose: We investigate how the boundary between product systems and their environment has been delineated in life cycle assessment and question the usefulness and ontological relevance of a strict division between the two. Methods: We consider flows, activities and impacts as general terms applicable to both product systems and their environment and propose that the ontologically relevant boundary is between the flows that are modelled as inputs to other activities (economic or environmental) and the flows that in a specific study are regarded as final impacts, in the sense that no further feedback into the product system is considered before these impacts are applied in decision-making. Using this conceptual model, we contrast the traditional mathematical calculation of the life cycle impacts with a new, simpler computational structure where the life cycle impacts are calculated directly as part of the Leontief inverse, treating product flows and environmental flows in parallel, without the need to consider any boundary between economic and environmental activities. Results and discussion: Our theoretical outline and the numerical example demonstrate that the distinctions and boundaries between product systems and their environment are unnecessary and in some cases obstructive from the perspective of impact assessment, and can therefore be ignored or chosen freely to reflect meaningful distinctions of specific life cycle assessment (LCA) studies. We show that our proposed computational structure is backwards compatible with the current practice of LCA modelling, while allowing inclusion of feedback loops both from the environment to the economy and internally between different impact categories in the impact assessment. Conclusions: Our proposed computational structure for LCA facilitates consistent, explicit and transparent modelling of the feedback loops between environment and the economy and between different environmental mechanisms. The explicit and transparent modelling, combining economic and environmental information in a common computational structure, facilitates data exchange and re-use between different academic fields.

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Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.736 SNIP 1.738 CiteScore 3.65
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On the Circular Supply Chain’s Impact on Revenue Growth for Manufacturers of Assembled Industrial Products – a Conceptual Development Approach

Materials scarcity, legislative compliance, and cost savings opportunities drive firms to take back used products from their customers for reuse, recovery, and recycling. For this purpose, firms implement circular supply chains. Although academia has given circular supply chain related topics considerable attention since the 1990s, the relationship between the circular supply chain and the firm’s revenue growth remains under-researched. Using revenue growth theory, this study examines how the use of circular supply chains can grow the revenue of manufacturers of assembled industrial products (e.g. process equipment and engines). Findings show that the circular supply chain can increase revenue streams from the firm’s existing markets, create market opportunities in new geographies, and provide access to market segments un-addressable with the firm’s new products. The paper adds to understanding of the circular supply chain and provides research suggestions into the revenue potential inherent in circular supply chains.

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Organisations: Center for Bachelor of Engineering Studies, Afdelingen for Produktionsudvikling, Department of Management Engineering, Operations Management, Management Science, Transport DTU
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On the Impact of using Mixed Integer Programming Techniques on Real-world Offshore Wind Parks

Wind power is a leading technology in the transition to sustainable energy. Being a new and still more competitive field, it is of major interest to investigate new techniques to solve the design challenges involved. In this paper, we consider optimization of the inter-array cable routing for offshore wind farms, taking power losses into account. Since energy losses in a cable depend on the load (i.e. wind), cable losses are estimated by considering a possibly large number wind scenarios. In order to deal with different wind scenarios efficiently we used a precomputing strategy. The resulting optimization problem considers two objectives: minimizing immediate costs (CAPEX) and minimizing costs due to power losses. This makes it possible to perform various what-if analyses to evaluate the impact of different preferences to CAPEX versus reduction of power losses. Thanks to the close collaboration with a leading energy company, we have been able to report results on a set of real-world instances, based on six existing wind parks, studying the economical impact of considering power losses in the cable routing design phase.

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On the importance of including a life cycle perspective in assessing the environmental performances of renewable energies

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Authors: Niero, M. (Intern), Olsen, S. I. (Intern), Laurent, A. (Intern)
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Optimal Scheduling of Railway Track Possessions in Large-Scale Projects with Multiple Construction Works

This paper addresses the railway track possession scheduling problem (RTPSP), where a large-scale railway infrastructure project consisting of multiple construction works is to be planned. The RTPSP is to determine when to perform the construction works and in which track possessions while satisfying different operational constraints and minimizing the total construction cost. To find an optimal solution of the RTPSP, this paper proposes an approach that, first, transfers the nominal market prices into track-possession-based real prices, and then generates a schedule of the construction works by solving a mixed-integer linear-programming model for the given track blocking proposal. The proposed approach is tested on a real-life case study from the Danish railway infrastructure manager. The results show that, in 2 h of computing time, the approach is able to provide solutions that are within 0.37% of the optimal one for six different blocking proposals and two alternative construction providers, so it can be used as an effective support tool in the primary planning stage to suggest preferable track possessions within the existing railway services. (C) 2017 American
Optimization in liner shipping

Seaborne trade is the lynchpin in almost every international supply chain, and about 90% of non-bulk cargo worldwide is transported by container. In this survey we give an overview of data-driven optimization problems in liner shipping. Research in liner shipping is motivated by a need for handling still more complex decision problems, based on big data sets and going across several organizational entities. Moreover, liner shipping optimization problems are pushing the limits of optimization methods, creating a new breeding ground for advanced modelling and solution methods. Starting from liner shipping network design, we consider the problem of container routing and speed optimization. Next, we consider empty container repositioning and stowage planning as well as disruption management. In addition, the problem of bunker purchasing is considered in depth. In each section we give a clear problem description, bring an overview of the existing literature, and go in depth with a specific model that somehow is essential for the problem. We conclude the survey by giving an introduction to the public benchmark instances LINER-LIB. Finally, we discuss future challenges and give directions for further research.
Optimization methods for the Train Unit Shunting Problem

We consider the Train Unit Shunting Problem, an important planning problem for passenger railway operators. This problem entails assigning train units from shunting yards to scheduled train services in such a way that the resulting operations are without conflicts. The problem arises at every shunting yard in the railway network and involves matching train units to arriving and departing train services as well as assigning the selected matchings to appropriate shunting yard tracks. We present an extensive comparison benchmark of multiple solution approaches for this problem, some of which
are novel. In particular, we develop a constraint programming formulation, a column generation approach, and a
randomized greedy heuristic. We compare and benchmark these approaches with two existing methods, a mixed integer
linear program and a two-stage heuristic. The benchmark contains multiple real-life instances provided by the Danish
State Railways (DSB) and Netherlands Railways (NS). The results highlight the strengths and weaknesses of the
considered approaches.

**General information**

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- Scopus rating (2010): SJR 2.477 SNIP 2.435
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- Web of Science (2009): Indexed yes
- BFI (2008): BFI-level 1
- Scopus rating (2008): SJR 1.739 SNIP 1.984
- Web of Science (2008): Indexed yes
- Scopus rating (2007): SJR 1.679 SNIP 2.041
- Web of Science (2007): Indexed yes
Optimization of a flexible multi-generation system based on wood chip gasification and methanol production

Flexible multi-generation systems (FMGs) consist of integrated and flexibly operated facilities that provide multiple links between the different sectors of the energy system. The present study treated the design optimization of a conceptual FMG which integrated a methanol-producing biorefinery with an existing combined heat and power (CHP) unit and industrial energy utility supply in the Danish city of Horsens. The objective was to optimize economic performance and minimize total CO₂ emission of the FMG while it was required to meet the local district heating demand plus the thermal utility demand of the butchery. The design optimization considered: Selection, dimensioning, location and integration of processes; operation optimization with respect to both hourly variations in operating conditions over the year as well as expected long term energy system development; and uncertainty analysis considering both investment costs and operating conditions. Applying a previously developed FMG design methodology, scalable models of the considered processes were developed and the system design was optimized with respect to hourly operation over the period 2015–2035. The optimal design with respect to both economic and environmental performance involved a maximum-sized biorefinery located next to local industry rather than in connection with the existing CHP unit. As the local industry energy demands were limited when compared to the biorefinery dimensions considered, process integration synergies were found to be marginal when compared to the economic and environmental impact of the biorefinery for the present case.

Assessing the impact of uncertainties on the estimated FMG performances, the net present value (NPV) of the optimal design was estimated to vary within the range 252.5–1471.6 M€ in response to changes of ± 25% in investment costs and methanol price, and considering two different electricity price scenarios. In addition, a change in the interest rate from 5% to 20% was found to reduce the lower bound of the NPV to 181.3 M€ for reference operating conditions. The results suggest that the applied interest rate and operating conditions, in particular the methanol price, would have a much higher impact on the economic performance of the designs than corresponding uncertainties in investment costs. In addition, the study outcomes emphasize the importance of including systematic uncertainty analysis in the design optimization of FMG concepts.

General information
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Organisations: Department of Mechanical Engineering, Thermal Energy, Department of Management Engineering, Department of Chemical and Biochemical Engineering, CHEC Research Centre, Energinet.dk
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Optimization of hospital ward resources with patient relocation using Markov chain modeling

Overcrowding of hospital wards is a well-known and often revisited problem in the literature, yet it appears in many different variations. In this study, we present a mathematical model to solve the problem of ensuring sufficient beds to
hospital wards by re-distributing beds that are already available to the hospital. Patient flow is modeled using a homogeneous continuous-time Markov chain and optimization is conducted using a local search heuristic. Our model accounts for patient relocation, which has not been done analytically in literature with similar scope. The study objective is to ensure that patient occupancy is reflected by our Markov chain model, and that a local optimum can be derived within a reasonable runtime. Using a Danish hospital as our case study, the Markov chain model is statistically found to reflect occupancy of hospital beds by patients as a function of how hospital beds are distributed. Furthermore, our heuristic is found to efficiently derive the optimal solution. Applying our model to the hospital case, we found that relocation of daily arrivals can be reduced by 11.7% by re-distributing beds that are already available to the hospital.

**General information**
State: Published
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- BFI (2009): BFI-level 1
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- BFI (2008): BFI-level 1
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- Web of Science (2008): Indexed yes
Optimizing the supply chain of biomass and biogas for a single plant considering mass and energy losses

The share of renewable energy in the Danish energy sector is increasing and the goal is that biogas production should reach a production level of 17 petajoules (PJ) in 2020 according to the Danish Energy Agency. However, this goal is currently not reachable due to lack of investments in biogas plants. In this paper, a mixed integer programming (MIP) model for finding the optimal production and investment plan for a biogas supply chain is presented to ensure better economy for the full chain hopefully stimulating future investments in biogas. The model makes use of step-wise linear functions to represent capital and operational expenditures at the biogas plant; considers the chain from the farmer to the end market; and includes changes of mass and energy content along the chain by modeling the losses and gains for all processes in the chain. Biomass inputs are scheduled on a weekly basis whereas energy outputs are scheduled on an hourly basis to better capture the changes of energy prices and potentially take advantage of these changes. The model is tested on a case study with co-digestion of straw, sugar beet and manure, considering natural gas, heat, and electricity as end products. The model finds a production and investment plan for a predefined location of the plant within half an hour of central processing unit (CPU) time. The resulting project turns out to be profitable and gives a production plan for each process, which underlines the possibilities of optimizing the processes in a biogas project.
Optimizing wind farm cable routing considering power losses

Wind energy is the fastest growing source of renewable energy, but as wind farms are getting larger and more remotely located, installation and infrastructure costs are rising. It is estimated that the expenses for electrical infrastructure account for 15-30% of the overall initial costs, hence it is important to optimize o shore inter-array cable routing. The routing should
connect all turbines to one (or more) offshore sub-station(s) while respecting cable capacities, no-cross restrictions, connection-limits at the substation, and obstacles at the site. The objective is to minimize both the capital that must be spent immediately in cable and installation costs, and the future reduced revenues due to power losses. The latter goal has not been addressed in previous work. We present a Mixed-Integer Linear Programming approach to optimize the routing using both exact and math-heuristic methods. In the power losses computation, wind scenarios are handled efficiently as part of the preprocessing, resulting in a MIP model of only slightly larger size. A library of real-life instances is introduced and made publicly available for benchmarking. Computational results on this testbed show the viability of our methods, proving that savings in the order of millions of Euro can be achieved.

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Web of Science (2011): Indexed yes  
BFI (2010): BFI-level 1  
Scopus rating (2010): SJR 2.477 SNIP 2.435  
Web of Science (2010): Indexed yes  
BFI (2009): BFI-level 1  
Scopus rating (2009): SJR 2.326 SNIP 2.577  
Web of Science (2009): Indexed yes  
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Scopus rating (2008): SJR 1.739 SNIP 1.984  
Web of Science (2008): Indexed yes  
Scopus rating (2007): SJR 1.679 SNIP 2.041  
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This paper reviews path-creation processes in road transport systems in the Nordic countries: e-mobility in Denmark, hydrogen and fuel-cell electrical vehicles in Norway, and advanced biofuels in Finland and Sweden. The study builds on the path creation literature, which seeks to explain the emergence of new technological pathways. Drawing on recent insights concerning the differences between design- and manufacturing-intensive technologies, the paper analyses the influence of technological characteristics on path creation processes. The case comparison indicates that technological characteristics seem to have greater influence on the content of activities in the later phase rather than the early phase of path creation processes. The analysis also emphasises that barriers to path creation processes differ depending on technological characteristics. This highlights the importance of considering technological characteristics in energy and transport policies.
Industry constitutes a substantial share of the energy and fuel consumption in energy systems. Types and patterns of usage within different industrial sectors are diverse. In this paper, we illustrate the energy and fuel use in Danish industry by 24 end-uses and 20 fuels and provide hourly profiles for electricity, space and process heating. The heat profiles are based on measured natural gas consumption. While seasonal patterns are predominant for space heating, process heating and electricity consumption are found to follow sector-related activities on a temporal scale. Building on this data analysis and profile generation we describe an approach to implement this level of detail in an integrated energy system model. This work is part of assessing the role of industry in the future Danish energy system.

Perceived Difficulty of Moral Dilemmas Depends on Their Causal Structure: A Formal Model and Preliminary Results
We introduce causal agency models as a modeling technique for representing and reasoning about ethical dilemmas. We find that ethical dilemmas, although they look similar on the surface, have very different causal structures. Based on their structural properties, as identified by the causal agency models, we cluster a set of dilemmas in Type 1 and Type 2 dilemmas. We observe that for Type 2 dilemmas but not for
Type 1 dilemmas a utilitarian action dominates the possibility of refraining from action. Hence, we hypothesize, based on the model, that Type 2 dilemmas are perceived as less difficult than Type 1 dilemmas by human reasoners. A behavioral study where participants rated the difficulty of dilemmas supports the models' predictions.

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**Pesticide emission quantification for life cycle assessment: A global consensus building process**

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Authors: Fantke, P. (Intern), Anton, A. (Ekstern), Grant, T. (Ekstern), Hayashi, K. (Ekstern)
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Scopus rating (2014): SJR 1.736 SNIP 1.738 CiteScore 3.65
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Scopus rating (2013): SJR 1.666 SNIP 1.979 CiteScore 3.35
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Phase-based Planning for Railway Infrastructure Projects

Maintenance for railway infrastructure is expensive and it often connects to a large cost investment. The maintenance work, which is implemented in track possessions, can also cause inconvenience to train operators and passengers. Therefore, Planning for maintenance and track possession is important in terms of economy and rail operations. This study presents two types of Phase-based Decision Support System (PDSS), i.e. Functional Phase-Based Planning Approach (F-PBPA) and Process-Oriented Phase-Based Planning Approach (PO-PBPA). They are used for decision support for the planning of the railway infrastructure maintenance activities at the strategic planning level. The objective is to achieve better economy, as well as improve cost efficiency.

F-PBPA consists of five main phases: Data Collection, Technical Optimization (TeO), Economic Optimization (EcO), Constrained Optimization (CoO), and Evaluation. In this thesis, two railway planning problems are formulated in Mixed Integer Linear Programming: Railway Preventive Condition-Based Tamping Scheduling Problem (RPCBTSP), which is presented in Papers 1-2, and Railway Track Possession Scheduling Problem (RTPSP), which is presented in Paper 3. The proposed models are tested based on the real data collected from two Danish railway corridors. A comparison of the results obtained by using the proposed PDSS with the result obtained from the literature (RPCBTSP) and the current practice (RTPSP), shows a cost reduction for both scheduling problems.

The proposed PDSS (F-PBPA) represents a step forward in solving railway scheduling problems. It can help Infrastructure Managers (IMs) gain a better understanding of the application of optimization in railway planning tasks. There are three optimization phases, TeO, EcO and CoO, that can be performed in sequence. First carries out a technical optimization (EcO), in which the minimal maintenance work can be identified by pure technical conditions. This is followed by an economic optimization (EcO), which results in an economic plan covering the same technically dened maintenance needs while minimizing the costs. Finally, constrained optimization (CoO) includes additional constraints and it allows the railway expert to adjust input parameters, thereby to obtain alternative maintenance plans.

PO-PBPA contains another systematic phase based process. With a focus on Life Cycle Cost (LCC), PO-PBPA can guide IMs, step by step, to estimate the total project cost for railway projects and to identify the solutions that are economically advantageous. Paper 4 suggests a new LCC framework for IMs to consider costs at the strategic planning level, and Paper 5 considers costs at the project planning level. The case studies show that LCC has in uence on the decisions
regarding the choice of the track possessions. Similarly, it appears that decisions may change compared to today's practice if other LCC elements are included into the cost estimation, e.g., passenger loss due to delay. A phase-based process such as the proposed PDSS, has great potential to support railway IMs to improve maintenance planning in practice, and reduce the overall costs without affecting railway infrastructure quality.

**General information**
State: Published
Organisations: Department of Management Engineering, Operations Management, Management Science, Transport DTU, Rambøll Danmark A/S
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**Relations**
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**Policies for system change: the transition to the bioeconomy**
Over the past 10-15 years the bioeconomy has increased in importance and has been promoted as a possible contribution to address important societal challenges such as climate change, food security, and global health issues. It is argued that the development towards a circular bioeconomy can be characterised as a system change as it requires fundamental changes in both production and consumption systems (Coenen, Hansen, and Rekers 2015; Bugge, Hansen, and Kliotkou 2016; Scordato, Bugge, and Fevolden 2017). However, even if governments in many countries have started to introduce policies addressing grand societal challenges, it remains unclear how policies can be implemented to achieve determined goals, and also how such policies can be understood in relation to existing policies (Kuhlmann and Rip 2014; OECD 2015; Schot and Steinmueller 2016). Still, we know very little about the extent to which policies are in fact giving sufficient importance to transformative failures (vis-à-vis market and structural failures). Also, to the extent that transformative failures are given attention in bioeconomy policies, we don't know whether this is consistent in the policy mix or only in terms of formulating visions.

**General information**
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, NIFU Nordic Institute for Studies in Innovation, Research and Education, University of Oslo, Lund University
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Number of pages: 5
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**Policy and planning related to climate change in developing countries**

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Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Nygaard, I. (Intern)
Number of pages: 7
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Polycyclic aromatic hydrocarbons. A review
The recent literature describing polycyclic aromatic hydrocarbons (PAHs) in air, water, soil and sediment, waste sludge, biomonitoring, toxicity, are reviewed. Aspects of sampling, sample preparations such as extraction of PAHs are discussed and analytical methods used are also reviewed. Developments on direct measurement techniques, such as ultraviolet absorption spectrometry and synchronous luminescence, are noted. This review also discusses the microbial PAH-remediation and PAH-degradation with emphasis on biological and physico chemical factors influencing the biodegradation.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Transport DTU, Fountain University, Osogbo
Authors: Lawal, A. T. (Ekstern), Fantke, P. (ed.) (Intern)
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Potentials and limitations of footprints for gauging environmental sustainability
To address the sustainability challenge, a large variety of footprints, aiming at capturing specific impacts of human activities on natural environment, have emerged. But, how do they fit into our addressing of environmental sustainability? Here, we build on a critical literature review to (1) provide an overview of existing footprints; (2) define their roles; (3) position them within the broad spectrum of known environmental problems and control variables of the planetary boundaries; and (4) argue for the need of consistent thresholds to benchmark footprint scores against absolute sustainability measures defined using science-based sustainability targets. Potentials, limitations and research needs are highlighted along these four points.

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State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
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Journal: Current Opinion in Environmental Sustainability
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Predicting the Potential Market for Electric Vehicles

Forecasting the potential demand for electric vehicles is a challenging task. Because most studies for new technologies rely on stated preference (SP) data, market share predictions will reflect shares in the SP data and not in the real market. Moreover, typical disaggregate demand models are suitable to forecast demand in relatively stable markets, but show limitations in the case of innovations. When predicting the market for new products it is crucial to account for the role played by innovation and how it penetrates the new market over time through a diffusion process. However, typical diffusion models in marketing research use fairly simple demand models. In this paper we discuss the problem of predicting market shares for new products and suggest a method that combines advanced choice models with a diffusion model to take into account that new products often need time to gain a significant market share. We have the advantage of a relatively unique databank where respondents were submitted to the same stated choice experiment before and after experiencing an electric vehicle. Results show that typical choice models forecast a demand that is too restrictive in the long period. Accounting for the diffusion effect, instead allows predicting the usual slow penetration of a new product in the initial years after product launch and a faster market share increase after diffusion takes place.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Traffic Modelling, Pontificia Universidad Catolica de Chile
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Main Research Area: Technical/natural sciences

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The purpose of this paper is to identify the prerequisites for establishing successful strategic partnerships in relation to renovating buildings sustainably. Establishing strategic partnerships is in the paper seen as a potential way to make building renovation more sustainable in Denmark particularly in terms of reducing energy consumption and use of resources and increase productivity. However, until now we have only had a limited number of such partnerships implemented and the few examples that do exist, mostly concern the construction of new buildings. The paper is based on
an investigation and analysis of strategic partnerships models as well as typical processes used in building renovation. Experiences from development of new strategic partnerships have particularly been found in the UK and Sweden. Based on two workshops with practitioners representing the whole value chain in the construction industry and analyses of two exemplary cases the paper suggests prerequisites for establishing successful strategic partnerships for sustainable building renovation. The results show that strategic partnerships are collaborations set up between two or more organizations that remain independent with the purpose of obtaining a goal of mutual and high priority based on a binding commitment and a long term perspective by a consecutive number of projects. An essential prerequisite for most of the identified challenges in building renovation processes is stable project partners. Framework agreements is a way to legally establish collaboration with more stable project partners, but it is also in itself an important prerequisite to target challenges related to tender, competition and an extreme focus on lowest price.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Engineering Systems
Authors: Jensen, P. A. (Intern), Johansen, J. B. (Intern), Thuesen, C. (Intern)
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PRINCIPLE 8. ACTING WITH CONSIDERATION FOR LEVEL OF INFLUENCE

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Authors: Ipsen, C. (Intern), Edwards, K. (Intern)
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Probabilistic Modeling and Visualization for Bankruptcy Prediction
In accounting and finance domains, bankruptcy prediction is of great utility for all of the economic stakeholders. The challenge of accurate assessment of business failure prediction, specially under scenarios of financial crisis, is known to be complicated. Although there have been many successful studies on bankruptcy detection, seldom probabilistic approaches were carried out. In this paper we assume a probabilistic point-of-view by applying Gaussian Processes (GP) in the context of bankruptcy prediction, comparing it against the Support Vector Machines (SVM) and the Logistic Regression (LR). Using real-world bankruptcy data, an in-depth analysis is conducted showing that, in addition to a probabilistic interpretation, the GP can effectively improve the bankruptcy prediction performance with high accuracy when compared to the other approaches. We additionally generate a complete graphical visualization to improve our understanding of the different attained performances, effectively compiling all the conducted experiments in a meaningful way. We complete our study with an entropy-based analysis that highlights the uncertainty handling properties provided by the GP, crucial for prediction tasks under extremely competitive and volatile business environments.

General information
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Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Coimbra
Authors: Antunes, F. (Ekstern), Ribeiro, B. (Ekstern), Pereira, F. C. (Intern)
Pages: 831-843
Publication date: 2017
Product portfolio optimization based on substitution
The development of production capabilities has led to proliferation of the product variety offered to the customer. Yet this fact does not directly imply increase of manufacturers’ profitability, nor customers’ satisfaction. Consequently, recent research focuses on portfolio optimization through substitution and standardization techniques. However when re-defining the strategic market decisions are characterized by uncertainty due to several parameters. In this study, by using a GAMS optimization model we present a method for supporting strategic decisions on substitution, by quantifying the impact of those parameters. Empirical evidence supplements the research, where a case study from an industry company producing construction material demonstrates the results.
Product variety, product complexity and manufacturing operational performance: A systematic literature review

Manufacturing in the twenty-first century has been wrought with the struggle to satisfy the rising demand for greater product variety and more complex products while still maintaining efficient manufacturing operations. However, the literature lacks an overview of which operational performance measures are most affected by increased variety and complexity. This study presents a systematic literature review of the recent scholarly literature on variety, complexity and manufacturing operational performance (MOP). Results show that product variety has a consistently negative relationship with MOP across different time, cost, quality and flexibility measures while product complexity lacks evidence of strong relationships with MOP measures.

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Prosumers and smart grid technologies in Denmark: developing user competences in smart grid households

This paper explores and describes resident’s experiences from a smart grid project that involved 20 households in a rural area in Denmark and ran from 2014 to 2015. The study is based on qualitative data from the participating households, collected 6, 12 and 18 months after the start of the intervention. Drawing on theories of social practice and the three intertwined elements of a practice: competences, images and materials, the paper contributes with an in-depth analysis of a complex intervention, focusing on how the participants changed energy practices as a result of the installed smart grid technologies. Long-term studies on such comprehensive energy interventions and derived changes in domestic energy practices are exceptional. The results show that people relate to their natural environment in new ways and construct new practices according to the movements of the sun; that they gradually become skilled practitioners and prosumers; and that they also increase consumption and develop expectations towards the energy company, requesting better dialogue on energy consumption and control. The paper concludes with reflections and suggestions on how findings may be relevant to policy and research in the area.
Radical Sustainable Innovation of Office Buildings

The recent development of technologies, processes and methods of sustainable building has enabled an unprecedented quantum leap in the available solutions. These possibilities could be interpreted as radical, yet they appear at a time as results of a long emergent development. The aim of this paper is to critically scrutinize, theoretically and empirically, whether radical innovation is occurring in sustainable building and what the implication are. The theoretical framework is based on concepts of radical innovation, inventions and sustainability. Radical sustainable innovation (RSI) should be characterized by high degrees of newness in the entire life cycle. RSI should offer significant enhancements of known benefits, entirely new benefits, or substantial cost reductions, leading to the transformation of existing markets, the creation of sustainable growth, and global sustainability. Thus, if buildings were RSI, it would be a shift in paradigm of how buildings are designed, build and used. Serious limitations on these notions are addressed. Buildings are large complex products realised through complex processes and with a long lifecycle. It appears impossible that an entire building should/could be radically new. How to evaluate radicality is a major challenge. It is tentatively proposed, to use standards for sustainable office buildings. Standards are developed to accelerate the sustainable development but has to some extent come to constrain possibilities of radical innovation. As the criteria of newness is incorporated in standards, going beyond them, could be viewed as radical. Empirically a selection of international cases of office buildings with very high scores of BREEAM, LEED and DGNB are examined. Six selected cases were analysed more in detail, one of them, GeelensCounterflow's Headquarters, being the most outstanding. This handful of office buildings have reached remarkable higher level of sustainability than contemporary building regulations. There isindeed a gap between these few buildings and the majority, making them more radical, yet due to weak social sustainability, they are not evaluated as radical innovation.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Chalmers University of Technology, Norwegian University of Science and Technology
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Railway capacity and expansion analysis using time discretized paths

When making investments in railway infrastructure it is important to be able to identify the limits for freight transportation in order to not only use the infrastructure in the best possible way, but to also guide future capacity investments. This paper presents a model to assess the capacity of railway freight transportation on a long term strategic level. The model uses an hourly time discretization and analyses the impact of railway network expansions based on future demand forecasts. It provides an optimal macroscopic freight train schedule and can indicate the time and place of any congestion. In addition, two expansions of the primary model are developed. The first can be used to determine the minimal number of expansions needed to ensure all freight can be feasibly routed, while the second can be used to schedule freight trains at hours not congested by passenger trains using variable penalties for the different passenger busy time slots. As part of a European Union project, all models are applied to a realistic case study that focuses on analyzing the capacity of railway network, in Denmark and Southern Sweden using demand forecasts for 2030. Results suggest that informative solutions can be found quickly with the proposed approach.

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State: Accepted/In press
Organisations: Department of Management Engineering, Management Science, Transport DTU, Operations Research, Aalborg University
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Number of pages: 28
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Main Research Area: Technical/natural sciences
Rationality of Intuition: Introducing adaptive heuristics to project decision-making

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems
Authors: Stingl, V. (Intern), Geraldi, J. (Intern)
Publication date: 2017
Realistic Creativity Training for Innovation Practitioners: The Know-Recognize-React Model

As creativity becomes increasingly recognized as important raw material for innovation, the importance of identifying ways to increase practitioners’ creativity through rigorously designed creativity training programs is highlighted. Therefore we set out to design a creativity training program specifically developed for innovation practitioners. Our aim, in addition to making a program based on a rigor scientific foundation, was to develop a program which would be relevant for practitioners, theoretically sound, as well as realistic for real world context. This we accomplished, in part, through the transdisciplinary study described in this paper. Co-creation was employed as a method to ensure the three layers of focus would be taken into consideration. The result is a program called Creative Awareness Training which is based on the new Know-Recognize-React model.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Valgeirsdóttir, D. (Intern), Onarheim, B. (Intern)
Number of pages: 14
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Reflections on experience with the global network on energy for sustainable development as a South–South global knowledge network

The Global Network on Energy for Sustainable Development (GNESD) was an initiative launched at the 2002 World Summit on Sustainable Development to support the agenda for increased access to clean energy, as a key contribution to sustainable development. In addition to understanding how the Network was established, how it sustained its relations and organised its activities across borders, we contribute to the debate on global networks by introducing the concept of ‘outcomes’, as a means to understand the extent to which, and how, the Network was able to influence change within the participating countries. We conclude from the analysis that although there are numerous observable and verifiable outcomes, these were achieved in a rather unsystematic manner especially during the early years, and in a more structured and targeted manner during the last 5 years of the Network. To a great extent this reflects the output-focus that was prevalent within UNEP, and other similar organisations, at the time the Network was established. It also reflects the well-known structural challenge faced by many epistemic communities, where the extent of their influence reflects the extent to which they are embedded within evolving power structures. Finally, we offer a number of specific recommendations for future networks, based on the GNESD experience.
Regression-based Online Anomaly Detection for Smart Grid Data

With the widely used smart meters in the energy sector, anomaly detection becomes a crucial mean to study the unusual consumption behaviors of customers, and to discover unexpected events of using energy promptly. Detecting consumption anomalies is, essentially, a real-time big data analytics problem, which does data mining on a large amount of parallel data streams from smart meters. In this paper, we propose a supervised learning and statistical-based anomaly detection method, and implement a Lambda system using the in-memory distributed computing framework, Spark and its extension Spark Streaming. The system supports not only iterative detection model refreshment from scalable data sets, but also real-time detection on scalable live data streams. This paper empirically evaluates the system and the detection algorithm, and the results show the effectiveness and the scalability of the proposed lambda detection system.

General information
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Organisations: Department of Management Engineering, Systems Analysis, DTU Climate Centre
Authors: Liu, X. (Intern), Nielsen, P. S. (Intern)
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Scopus rating (2016): CiteScore 5.17 SJR 1.999 SNIP 1.798
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Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.647 SNIP 2.63 CiteScore 5.7
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Web of Science (2013): Indexed yes
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Scopus rating (2012): SJR 1.998 SNIP 2.25 CiteScore 4.25
Regulatory barriers for activating flexibility in the Nordic-Baltic electricity market
The rapid growth of variable renewable energy (VRE) and the expected decrease of conventional generation capacities will generate more flexibility needs in power systems and require flexibility resources to be activated. Flexibility potentials do exist, whether they refer to installed generation, load adjustment or to a greater coupling to other energy sectors. In this paper, we identify the framework conditions that influence the provision of VRE-friendly flexibility in the Nordic and Baltic electricity sector, i.e., the market and regulatory settings that act as drivers or barriers to flexibility. We find that the most restrictive barriers against flexibility are emitted by public authorities as part of broader policy strategies. Overall, we find that current regulatory and market framework conditions do not hinder flexibility. However, despite that, flexibility remains limited due to a lack of coherent instruments intended to both the demand and supply-side to effectively act flexibly.
Rejsetidsvariabilitet på strækninganiveau

General information
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Organisations: Department of Management Engineering, Systems Analysis, Transport DTU
Authors: Hjorth, K. (Intern), Jensen, T. C. (Intern), Møller, N. F. (Intern), Fosgerau, M. (Intern)
Number of pages: 46
Publication date: 2017

Relational uncertainty in service dyads
Purpose: Relational uncertainty determines how relationships develop because it enables the building of trust and commitment. However, relational uncertainty has not been explored in an inter-organisational setting. This paper investigates how organisations experience relational uncertainty in service dyads and how they resolve it through suitable organisational responses to increase the level of service quality.

Design/methodology/approach: We apply the overall logic of Organisational Information-Processing Theory (OIPT) and present empirical insights from two industrial case studies collected via semi-structured interviews and secondary data.

Findings: The findings suggest that relational uncertainty is caused by the partner's unresolved organisational uncertainty, i.e. their lacking capabilities to deliver or receive (parts of) the service. Furthermore, we found that resolving the relational uncertainty increased the functional quality while resolving the partner's organisational uncertainty increased the technical quality of the delivered service.

Originality: We make two contributions. First, we introduce relational uncertainty to the OM literature as the inability to predict and explain the actions of a partnering organisation due to a lack of knowledge about their abilities and intentions. Second, we present suitable organisational responses to relational uncertainty and their effect on service quality.

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Authors: Kreye, M. (Intern)
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Renewable Energy and Carbon Management in the Cradle-to-Cradle Certification: Limitations and Opportunities

As part of the Cradle to Cradle® (C2C) certification program, the C2C certification criterion, Renewable Energy and Carbon Management (RE&CM), focuses on use of electricity from renewable energy (RE) and direct greenhouse gas offsets in the manufacturing stage and, to a limited extent, on the cradle to gate only at the highest level of certification. The aim of this study is to provide decision makers with a quantified overview of possible limitations of that C2C certification requirement and potential gains by introducing a full lifecycle assessment (LCA) perspective to the scheme. Scenario analysis was used to perform an LCA of an aluminum can system representing different levels of the C2C certification criterion, RE&CM, considering different strategies to achieve 100% RE in the manufacturing stage. The adoption of a broader life cycle RE perspective was considered through the implementation of electricity from renewable sources from cradle to grave. Our results show that compliance with the current RE&CM certification framework offers limited benefits, that is, significant reduction for climate change, but negligible reductions for other environmental impacts (e.g., particulate matter and acidification). However, increasing the share of RE in the primary aluminum production from a full life cycle perspective can greatly increase the environmental benefits brought up by the C2C certification not only for climate change, but also for the broader range of impact categories. In our striving toward environmental sustainability, which often cannot be approximated by climate-change impacts alone, we therefore recommend decision makers in industries to combine the C2C certification with LCA when they define strategies for the selection of RE and raw materials.
Aluminium, Circular economy, Cradle-to-Cradle (C2C), Industrial ecology, Life cycle assessment (LCA), Packaging

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Response to Comment on "Weighting and Aggregation in Life Cycle Assessment: Do Present Aggregated Single Scores Provide Correct Decision Support?"

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Aarhus University
Authors: Kalbar, P. (Intern), Birkved, M. (Intern), Elsborg Nygaard, S. (Ekstern), Hauschild, M. Z. (Intern)
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Scopus rating (2015): SJR 1.44 SNIP 1.689 CiteScore 3.82
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.628 SNIP 1.706 CiteScore 3.07
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
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Rest to Resource – Circular Innovation and Business Development in SMEs

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Organisations: Department of Management Engineering, Technology and Innovation Management, Department of Mechanical Engineering, Engineering Design and Product Development
Authors: Andersen, M. M. (Intern), Setti, A. M. (Intern), Pigosso, D. C. A. (Intern)
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Revisiting the Praise Paradox: An Action-Control Perspective on Negative Affect and Idea Generation

Building on personality-systems-interactions (PSI) theory, we analyze how individuals’ action control influences the originality of the ideas they generate when experiencing negative affect. We use a pre-test/post-test experimental design with 328 participants that captures dynamic effects between negative affect and idea generation. The patterns we identify provide a detailed understanding of how individuals’ action control determines the kind of feedback needed to increase originality. Thereby, we provide important new insights for research on the generation of original ideas that are necessary...
for entrepreneurs and organizations that aim to generate novelty and differentiate themselves from others.

**General information**
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, University of Southern Denmark
Authors: Lomberg, C. (Intern), Klyver, K. (Ekstern)
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**Risikofaktorer ved vejarbejde**
Uheldsrisikoen er forøget på strækninger med vejarbejde. En analyse af dødsuheld i USA viser, at særligt trafikanter manglende tilpasning af deres adfærd er en vigtig faktor i forbindelse med disse uheld. Tiltag der kan sikre et mere jævnt trafik-flow i passende lav fart på strækninger med vejarbejde er vigtige elementer i forebygelsen.

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Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern)
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Publication: Communication › Newspaper article – Annual report year: 2017

**Risk and sustainability analysis of complex hydrogen infrastructures**
Building a network of hydrogen refuelling stations is essential to develop the hydrogen economy within transport. Additional, hydrogen is regarded a likely key component to store and convert back excess electrical power to secure future energy supply and to improve the quality of biomass-based fuels. Therefore, future hydrogen supply and distribution chains will have to address several objectives. Such a complexity is a challenge for risk assessment and risk management of these chains because of the increasing interactions. Improved methods are needed to assess the supply chain as a whole. The method of “Functional modelling” is discussed in this paper. It will be shown how it could be a basis for other decision support methods for comprehensive risk and sustainability assessments.

**General information**
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Organisations: Department of Management Engineering, Implementation and Performance Management, University of Pisa
Authors: Markert, F. (Intern), Marangon, A. (Ekstern), Carcassi, M. (Ekstern), Duijm, N. J. (Intern)
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Web of Science (2017): Indexed yes
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Web of Science (2016): Indexed yes
Risk Management Challenges in Large-scale Energy PSS

Probabilistic risk management approaches have a long tradition in engineering. A large variety of tools and techniques based on the probabilistic view of risk is available and applied in PSS practice. However, uncertainties that arise due to lack of knowledge and information are still missing adequate representations. We focus on a large-scale energy company in Denmark as one case of current product/servicesystems risk management best practices. We analyze their risk management process and investigate the tools they use in order to support decision making processes within the company. First, we identify the following challenges in the current risk management practices that are in line with literature: (1) current methods are not appropriate for the situations dominated by weak knowledge and information; (2) quality of traditional models in such situations is open to debate; (3) quality of input data and representation of the results to the decision makers play an important role. Second, we introduce a selection of alternative, so-called “post-probabilistic”, risk management methods developed across different scientific fields to cope
Roadmap toward addressing and communicating uncertainty in LCA

Life Cycle Assessment (LCA) models for quantifying emissions and resources used as part of the life cycle inventory (LCI) step and for characterizing related impacts on human health, ecosystem quality, and natural resources as part of the life cycle impact assessment (LCIA) step together contribute considerable uncertainty and variability at different assessment phases. These contributions have led to questions about the ability of LCA results to be used in decision-making. Mainly, variability is related to spatiotemporal, technological, and interspecies and inter-individual differences, while uncertainty is further related to input data, model selection and choices, amongst other aspects. Currently, methods exist to assess and assign uncertainty and variability on LCI data as well as LCIA characterization results. However, often uncertainty is only assessed and reported qualitatively, is not comparable across impact categories and not consistently assessed and reported across levels of detail. Furthermore, many existing methods and models do not report uncertainty at all or limit their uncertainty assessment to a sensitivity analysis of selected input parameters, while ignoring variability, model uncertainty, and uncertainty related to choices and human errors. As part of the LCA Capability Roadmap, a committee of nearly 40 contributors under the auspices of the SETAC North America LCA Interest Group is currently working to identify research needs in the area of ill-characterized uncertainty. The group has investigated current best LCA practices, such as refinements to the pedigree matrix used to assess LCI data quality. In parallel, in the frame of UNEP-SETAC Life Cycle Initiative flagship project on providing Harmonization and Global Guidance for Environmental Life Cycle Impact Assessment Indicators, a task force focusing on uncertainty aspects has been established. This task force currently investigates best practices in existing LCIA methods and works on a minimum set of criteria for consistently reporting uncertainty in LCIA. These best practices and state of the art will be presented along with proposed milestones toward providing guidance of how to address and report uncertainty in LCA to improve current practice. Feedback is encouraged.
Road signage comprehension and overload: The role of driving style and need for closure

This study looks at the provision of information via traffic signs and its relation with driving styles, need for closure and socio-economic characteristics of road users. A web-based questionnaire allowed collecting information about traffic signs and road surface markings in 12 traffic locations that were presented in two variations: (i) in the first 6 cases, a first configuration contained information that led to ambiguity about the manoeuvres that were legal and a second configuration added traffic signs to eliminate the ambiguity; (ii) in the second 6 cases, a first configuration presented the road environment without signs and a second configuration added traffic signs to verify information redundancy. Respondents indicated for each location which manoeuvres they deemed legal and how many conflicts they estimated without traffic signs, and safety perception and comfort level improved with the traffic signs. Moreover, respondents reported their socio-economic characteristics and filled two questionnaires about need for closure and driving styles. Completed questionnaires from 753 participants from Hungary with expertise in transport and traffic were analysed via statistical and factor analysis, and results reveal that: (i) road users are heterogeneous in their perception and processing of information, as the number of manoeuvres correctly identified as legal relates to their socio-economic characteristics; (ii) the perception of improvements after the provision of information relates also to the road users’ socio-economic characteristics and their driving style and need for closure; (iii) different amounts of information are sufficient for different road users not to feel uncertain regarding manoeuvres being legal at a certain traffic location.
Rural electrification through private models: the case of solar-powered mini-grid development in Kenya: Exploring the hybrid nature of private business models and the interplay between new players and existing structures in the Kenyan rural electrification regime

In Sub-Saharan Africa more than 630 million people live without access to electricity. Access to modern energy services like phone-charging, electric lighting, cooling, heating, etc. is an important enabler of social and economic development and human well-being. Renewable energy-based electrification solutions that deliver power through a decentralised mini-grid to village communities have gained in prominence as a supplementary path to achieving universal access in the realisation that, in many developing countries, traditional utility-led grid-electrification efforts will not succeed in bringing electricity to everyone in the near future. In East Africa, mini-grid development has primarily been driven by NGOs or faithbased organisations. However, recent technological advances like mobile phone payment solutions and drops in solar PV prices are making solar-powered mini-grids a cost-effective alternative to traditional fossil fuel-based solutions like diesel generators in off-grid areas in many countries. This has made rural electrification through mini-grids an interesting area for private-sector firms looking to do mission-driven business in the growing African economies. This, in combination with the broader turn in international development cooperation towards supporting private sector- and market-based solutions to facilitate development goals, makes private sector-driven rural electrification an interesting area for investigation. Against this background, the aim of the research presented in this thesis is to explore the processes behind the emergence of such private-sector engagement, as well as the functioning and effects of specific private-sector models. This research topic is explored through a qualitative multi-case study design to provide context-specific insights into the particularities of the Kenyan mini-grid niche. Dynamics of change in the Kenyan rural electrification regime is investigated through the lens of the multilevel perspective to explore how niche-level actors conduct institutional entrepreneurship to influence existing structures in the rural electrification regime. Furthermore, min-grid firms’ practices are explored to understand how they respond to competing institutional logics made available to them due to their dual social and economic mission.

The research finds that mini-grid firms operating in Kenya contribute to system building in the sense of making private mini-grid development a viable and sustainable alternative to grid-extension in various ways by following different strategies. While some actors are seeking to strengthen the private mini-grid niche by actively seeking to change the ‘rules of the game’ in the broader rural electrification regime through negotiations, advocacy and other forms of institutional work, other actors are following a strategy of increasing cohesion within the niche by building partnerships and generating knowledge and learning. This shows how niches build and grow not only through niche-internal processes, but also through purposeful actor-driven work with the aim to create conditions that allows the niche and the regime to co-exist.

At the firm level, the research finds that mini-grid firms respond differently to the competing demands of the social welfare and economic viability logics available to them. While some firms enact the logic of economic viability as the predominant logic guiding their work, other firms combine and blend the two logics. Each of the two strategies of prioritising or blending is pursued with the conviction that the underlying practices and decisions made manifest in such strategies will benefit these firms. While it is too early to draw conclusions regarding the prospects for the long-term sustainability of these firms, the existence of these various strategies is significant in two ways. First, it suggests that mission-driven enterprises can be differentiated based on the way they enact logics in their work. Secondly, it opens up a path to further research into how each of these strategies may influence the long-term sustainability of these firms.
Rural electrification through private models: the case of solar-powered mini-grid development in Kenya: Exploring the hybrid nature of private business models and the interplay between new players and existing structures in the Kenyan rural electrification regime
Publication: Research › Ph.D. thesis – Annual report year: 2017

Safe manning of merchant ships: an approach and computer tool
In the shipping industry, staffing expenses have become a vital competition parameter. In this paper, an approach and a software tool are presented to support decisions on the staffing of merchant ships. The tool is implemented in the form of a Web user interface that makes use of discrete-event simulation and allows estimation of the workload and of whether different scenarios are successfully performed taking account of the number of crewmembers, watch schedules, distribution of competencies, and others. The software library 'SimManning' at the core of the project is provided as open source. The tool is conceived as a support for the maritime authorities, certifying bodies and shipping companies to assess whether a ship is safely manned.

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State: Published
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BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.518 SNIP 1.482 CiteScore 1.59
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.302 SNIP 1.441 CiteScore 1.77
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.987 SNIP 1.524 CiteScore 1.96
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.669 SNIP 1.191 CiteScore 1.14
ISI indexed (2012): ISI indexed no
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.028 SNIP 1.241 CiteScore 1.21
ISI indexed (2011): ISI indexed no
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.789 SNIP 1.263
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.554 SNIP 1.055
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.773 SNIP 0.915
Scopus rating (2007): SJR 0.641 SNIP 0.844
Scopus rating (2006): SJR 0.794 SNIP 1.039
SafetyBarrierManager, a software tool to perform risk analysis using ARAMIS's principles

The ARAMIS project resulted in a number of methodologies, dealing with among others: the development of standard fault trees and “bowties”; the identification and classification of safety barriers; and including the quality of safety management into the quantified risk assessment. After conclusion of the ARAMIS project, Risø National Laboratory started developing a tool that could implement these methodologies, leading to SafetyBarrierManager. The tool is based on the principles of “safety-barrier diagrams”, which are very similar to “bowties”, with the possibility of performing quantitative analysis. The tool allows constructing comprehensive fault trees, event trees and safety-barrier diagrams. The tool implements the ARAMIS idea of a set of safety barrier types, to which a number of safety management issues can be linked. By rating the quality of these management issues, the operational probability of failure on demand of the safety barriers can be calculated. The paper will give a short description of the features of the tool, with emphasis on the methodologies that originate from the ARAMIS project. The paper will also address developments and experiences over the last years, which have inspired additional features. This includes a discussion of the use of generic management issues as opposed to concrete safety measures targeted at specific safety barriers, which includes a discussion of the basic philosophy in the ARAMIS methodology of dealing with safety management. The adjustments to the barrier typology is also discussed.

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Organisations: Department of Management Engineering, Engineering Systems
Authors: Duijm, N. J. (Intern)
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Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Scheduling EURO-k Conferences
EURO-k conferences are among the largest Operations Research conferences in the world, typically including more than 2000 presentations. As opposed to many other conferences, EURO-k conferences are hierarchically organized, and the conference schedule should reflect this structure to make navigation easier and more logical. In this article we present a scheduling tool that has been developed during the EURO2015 and EURO2016 conferences to schedule the streams, sessions and talks. A schedule is obtained by solving a number of optimization models, each addressing a specific objective. First, areas are assigned to buildings, making sure that related research areas are located close to each other. Next, the goal is to allocate each stream to only one room, and to ensure that the stream consists of a sequence of consecutive time slots. Finally, we optimize the assignment of room sizes. We illustrate the process by showing results from the scheduling of the EURO2016 conference, which took place in Poznan (Poland), July 3–6, 2016.
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Authors: Stidsen, T. J. R. (Intern), Pisinger, D. (Intern), Vigo, D. (Ekstern)
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Web of Science (2017): Indexed yes
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Scopus rating (2016): CiteScore 3.83 SJR 2.505 SNIP 2.339
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.334 SNIP 2.412 CiteScore 3.59
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.186 SNIP 2.485 CiteScore 3.21
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.346 SNIP 2.735 CiteScore 3.25
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.418 SNIP 2.588 CiteScore 3.01
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.401 SNIP 2.441 CiteScore 3.02
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.477 SNIP 2.435
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.326 SNIP 2.577
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.739 SNIP 1.984
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.679 SNIP 2.041
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.299 SNIP 2.023
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.194 SNIP 1.913
Scopus rating (2004): SJR 1.24 SNIP 1.882
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.991 SNIP 1.507
Scopus rating (2002): SJR 0.97 SNIP 1.279
SciCloud: A Scientific Cloud and Management Platform for Smart City Data
The pervasive use of Internet of Things and smart meter technologies in smart cities increases the complexity of managing the data, due to their sizes, diversity, and privacy issues. This requires an innovative solution to process and manage the data effectively. This paper presents an elastic private scientific cloud, SciCloud, to tackle these grand challenges. SciCloud provides on-demand computing resource provisions, a scalable data management platform and an in-place data analytics environment to support the scientific research using smart city data.

General information
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Organisations: Department of Management Engineering, Systems Analysis, Department of Civil Engineering, Section for Building Energy, Section for Indoor Climate and Building Physics
Authors: Liu, X. (Intern), Nielsen, P. S. (Intern), Heller, A. (Intern), Gianniou, P. (Intern)
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Scientific evidence suggests a changed approach in ergonomic intervention research
Ergonomic interventions have generally been unsuccessful in improving workers’ health, with concurrent rationalization efforts negating potentially successful intervention initiatives. We propose the two aims are considered simultaneously, aiming at the joint consideration of competitive performance and work environment in a long-term perspective (“organizational sustainability”). A prerequisite is a high level of dialogue between the different groups of stakeholders, and we argue that the Nordic countries, through high levels of trust and justice (social capital), have unique opportunity to carry out such research. The present authors bring forth the vision of “a Nordic Model for development of more sustainable production systems”.

General information
State: Published
Organisations: Department of Management Engineering, Implementation and Performance Management, Management Science, University of Gothenburg, Luleå University of Technology, Norwegian University of Science and Technology, Ryerson University
Authors: Winkel, J. (Intern), Schiller, B. (Ekstern), Dellve, L. (Ekstern), Edwards, K. (Intern), Neumann, W. P. (Ekstern), Öhrling, T. (Ekstern), Westgaard, R. H. (Ekstern)
Pages: 454-460
Publication date: 2017
Scripting, control, and privacy in domestic smart grid technologies: Insights from a Danish pilot study

Smart grid research in Denmark has increasingly turned its focus on aggregator trading flexibility achieved by remotely controlling appliances, studying the technologies involved rather than the control. This paper investigates how different types of control were envisioned and designed for a two-year smart grid trial in Denmark with 20 private households. Using the notion of script, processes of in- and de-scription were used to gain insights into perceived and enacted control. Based on empirical data from 26 interviews and three workshops, we show how the in-scription process of control can be characterized as dynamic and includes negotiations between the residents and those responsible for the project. Second, we show how users de-script control, and third, we outline the project owners’ reaction to the user's de-scription of control. The design of the remote control appears to have promoted a reference for ‘passive consumers’ within a smart grid. This design prompts questions about how the users in smart grid development are envisioned and configured using different ideas about control. With current development and the need for additional energy reductions, consumers who invest in photovoltaic solar cells and electric vehicles lose interest in delivering their energy to the system level.

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Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Hansen, M. (Intern), Hauge, B. (Intern)
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Sea level adaptation decisions under uncertainty

Sea level rise has serious consequences for harbor infrastructure, storm drains and sewer systems, and many other issues. Adapting to sea level rise requires comparing different possible adaptation strategies, comparing the cost of different actions (including no action), and assessing where and at what point in time the chosen strategy should be implemented. All these decisions must be made under considerable uncertainty—in the amount of sea level rise, in the cost and prioritization of adaptation actions, and in the implications of no action. Here we develop two illustrative examples: for Bergen on Norway’s west coast and for Esbjerg on the west coast of Denmark, to highlight how technical efforts to understand and quantify uncertainties in hydrologic projections can be coupled with concrete decision-problems framed by the needs of the end-users using statistical formulations. Different components of uncertainty are visualized. We demonstrate the value of uncertainties and show for example that failing to take uncertainty into account can result in the median-projected damage costs being an order of magnitude smaller.

General information

State: Published
Organisations: Department of Management Engineering, Systems Analysis, Norwegian Computing Center, Centre for International Climate and Environmental Research (CICERO), Wageningen University & Research
Authors: Thorarinssdottir, T. L. (Ekstern), Guttorp, P. (Ekstern), Drews, M. (Intern), Kaspersen, P. S. (Intern), de Bruin, K. (Ekstern)
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BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.205 SNIP 1.748 CiteScore 3.65
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.123 SNIP 1.567 CiteScore 3.12
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.946 SNIP 1.481 CiteScore 2.92
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.051 SNIP 1.433
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.132 SNIP 1.524
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.753 SNIP 1.522
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.619 SNIP 1.401
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.663 SNIP 1.589
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.596 SNIP 1.327
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.597 SNIP 1.427
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.904 SNIP 1.762
Scopus rating (2002): SJR 1.805 SNIP 1.979
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 2.135 SNIP 1.668
Web of Science (2001): Indexed yes
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Search for Knowledge: Text Mining for Examination of University-Industry Knowledge Transfer

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Department of Management Engineering, Technology and Innovation Management
Sectoral dynamics and technological convergence: an evolutionary analysis of eco-innovation in the automotive sector

We know from evolutionary theory that sectoral characteristics are important to innovation. This paper investigates if sectoral characteristics also are important to eco-innovation, a hitherto under-researched theme. We argue that research into possible sectoral patterns in eco-innovation is key to understanding green industrial dynamics and the greening of the economy. This paper investigates to what degree the economy is greening horizontally (sector-wise). Starting with a sectoral case study, we undertake a longitudinal analysis of the breath and strength of the greening of the automotive sector from 1965 to 2012, focusing on powertrain technologies. The empirical analysis is based on patent data amongst big car producers and focuses on identifying changes in two main aspects: (1) the convergence/divergence of firms’ green strategies and technologies within the automotive sector; and (2) the contribution of alternative key green technological trajectories relative to the dominant design. Our findings indicate that the evolution of relative green patenting has followed a positive, linear growth over the last decades with increasing participation of alternative propulsion technologies and increasing convergence of automakers’ strategies towards a diversified portfolio.

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Authors: Faria, L. (Intern), Andersen, M. M. (Intern)
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Scopus rating (2016): CiteScore 1.16 SJR 0.66 SNIP 0.768
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.263 SNIP 1.114 CiteScore 1.83
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.694 SNIP 0.831 CiteScore 1.35
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.062 SNIP 0.893 CiteScore 1.52
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.73 SNIP 0.808 CiteScore 1.29
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.705 SNIP 0.92 CiteScore 1.42
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.432 SNIP 1.522
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1 SNIP 1.167
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.277 SNIP 1.358
Scopus rating (2007): SJR 0.839 SNIP 1.213
Sectoral patterns versus firm-level heterogeneity - The dynamics of eco-innovation strategies in the automotive sector

This paper sheds light on some important but underestimated elements of green industrial dynamics: the evolution of firms' eco-innovation strategies and activities within a sector. While eco-innovation sectoral case studies have taken place before, our analysis is distinct in investigating the rate, direction and extent of eco-innovation in the automotive sector, represented here by the main automakers, in order to identify possibly sectoral-specific patterns in firms' strategies, as opposed to divergent strategic behaviors, grounded on evolutionary economic theory. We conduct a two-step empirical analysis using patent data from 1965 to 2012. Our findings suggest a process of co-evolution of firms' strategies and indicate that strong sectoral-specific patterns of eco-innovation are present in this sector from the mid-2000s onwards. For fuel cells technologies, however, we observe the formation of two antagonist patterns. A further econometric analysis is conducted and indicates that the positioning of the firms between these two groups is correlated with the firms’ profit margins and the size of firms' patent portfolios.
Sensing behaviour in healthcare design

We are entering an era of distributed healthcare that should fit and respond to individual needs, behaviour and lifestyles. Designing such systems is a challenging task that requires continuous information about human behaviour on a large scale, for which pervasive sensing (e.g. using smartphones and wearables) presents exciting opportunities. While mobile sensing approaches are fuelling research in many areas, their use in engineering design remains limited. In this work, we present a collection of common behavioural measures from literature that can be used for a broad range of applications. We focus specifically on activity and location data that can easily be obtained from smartphones or wearables. We further demonstrate how these are applied in healthcare design using an example from dementia care. Comparing a current and proposed scenario exemplifies how integrating sensor-derived information about user behaviour can support the healthcare design goals of personalisation, adaptability and scalability, while emphasising patient quality of life.
Ship routing and scheduling: the cart before the horse conjecture

The literature on ship routing and scheduling has grown substantially over the last few decades, with many papers authored by top experts in this area and examining various versions of the problem. Many publication outlets have hosted these papers, with a broad variety of problem formulations, solution approaches, and application contexts. Equally broad is the range of angles of these papers, spanning the wide field from mostly theoretical analyses, focusing on specific methodological tools, all the way to applied studies, focusing on specific real-world applications. The basic hypothesis of this paper is that we are increasingly seeing papers that are more of theoretical than practical value, and in fact some of them often place the solution approach before real problem definition. As a result of this approach, the connection between these papers and reality is sometimes distant or elusive. To investigate this hypothesis, this paper tries to explain some misconceptions, refers to a limited sample of such papers, and suggests possible ways to rectify this situation in the future.
Simulation of Optimal Decision-Making Under the Impacts of Climate Change

Climate change causes transformations to the conditions of existing agricultural practices appointing farmers to continuously evaluate their agricultural strategies, e.g., towards optimising revenue. In this light, this paper presents a framework for applying Bayesian updating to simulate decision-making, reaction patterns and updating of beliefs among farmers in a developing country, when faced with the complexity of adapting agricultural systems to climate change. We apply the approach to a case study from Ghana, where farmers seek to decide on the most profitable of three agricultural systems (dryland crops, irrigated crops and livestock) by a continuous updating of beliefs relative to realised trajectories of climate (change), represented by projections of temperature and precipitation. The climate data is based on combinations of output from three global/regional climate model combinations and two future scenarios (RCP4.5 and RCP8.5) representing moderate and unsubstantial greenhouse gas reduction policies, respectively. The results indicate that the climate scenario (input) holds a significant influence on the development of beliefs, net revenues and thereby optimal farming practices. Further, despite uncertainties in the underlying net revenue functions, the study shows that when the beliefs of the farmer (decision-maker) opposes the development of the realised climate, the Bayesian methodology allows for simulating an adjustment of such beliefs, when improved information becomes available. The framework can, therefore, help facilitating the optimal choice between agricultural systems considering the influence of climate change.

General information
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.05 SJR 0.794 SNIP 0.996
Web of Science (2016): Indexed yes
Simulatortrænet fodsæd på vej

At finde et sikkert tidspunkt til at krydse en trafikeret vej med blandet trafik og varierende kørehastigheder kan være vanskeligt, ikke mindst for ældre. En ny undersøgelse fra Frankrig tyder på, at træning i en fodgængersimulator kan bidrage til, at ældre fodgængeres risikobevidsthed øges, så de bliver bedre i stand til at vælge sikre tidspunkter at krydse en vej på og risikoen for påkørsel reduceres.

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Smart grid and households: How are household consumers represented in experimental projects?

This study contributes a comparative analysis of 11 Danish smart grid experimental projects with household involvement. The analysis describes the scripts for the future smart grid interaction investigated in the examined projects, the approaches to user representation, and the project findings concerning consumers and smart grids. Three main dimensions of the scripts are identified and discussed: economic incentives, automation, and information/visualisation. The methods employed for the development of user representations are primarily technical and techno-economic. While our analysis confirms previous findings that economic rationales and automation are central elements of smart grid scripts, the analysis also shows that there is considerable variation in the details of the scripts investigated. Our findings suggest that it may be useful for future smart grid projects to be more systematic and explicit in the analysis of household user perspectives and may consider a broader set of methods in this regard.

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Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Hansen, M. (Intern), Borup, M. (Intern)
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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.56 SJR 0.653 SNIP 0.88
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.651 SNIP 0.639 CiteScore 1.43
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.562 SNIP 0.834 CiteScore 1.22
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.548 SNIP 0.792 CiteScore 1.37
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.765 SNIP 0.992 CiteScore 1.48
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.622 SNIP 0.969 CiteScore 1.34
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.681 SNIP 0.987
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.581 SNIP 1.158
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.517 SNIP 0.719
Scopus rating (2007): SJR 0.576 SNIP 0.957
Scopus rating (2006): SJR 0.584 SNIP 0.859
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.466 SNIP 0.716
Scopus rating (2004): SJR 0.472 SNIP 0.735
Scopus rating (2003): SJR 0.525 SNIP 0.855
Smart grids and households: how are household consumers represented in experimental projects?
This study contributes a comparative analysis of 11 Danish smart grid experimental projects with household involvement. The analysis describes the scripts for the future smart grid interaction investigated in the examined projects, the approaches to user representation, and the project findings concerning consumers and smart grids. Three main dimensions of the scripts are identified and discussed: economic incentives, automation, and information/visualisation. The methods employed for the development of user representations are primarily technical and techno-economic. While our analysis confirms previous findings that economic rationales and automation are central elements of smart grid scripts, the analysis also shows that there is considerable variation in the details of the scripts investigated. Our findings suggest that it may be useful for future smart grid projects to be more systematic and explicit in the analysis of household user perspectives and may consider a broader set of methods in this regard.

Measuring the sustainability of goods and services in a systematic and objective manner has become an issue of paramount importance. Life cycle sustainability assessment (LCSA) is a holistic methodology whose aim is to integrate into a compatible format the analysis of the three pillars of sustainability, namely, economy, environment, and society. Social life cycle assessment (S-LCA) is a novel methodology still under development, used to cover the social aspects of sustainability within LCSA. The aim of this article is to provide additional discussion on the practical application of S-LCA by suggesting a new classification and characterization model that builds upon previous methodological developments. The structure of the social analysis has been adapted to maintain coherence with that of standard LCA. The application of this methodology is demonstrated using a case study—the analysis of power generation in a concentrated solar power plant in Spain. The inventory phase was completed by using the indicators proposed by the United Nations Environment Program/Society for Environmental Toxicology and Chemistry (UNEP/SETAC) Guidelines on S-LCA. The impact assessment phase was approached by developing a social performance indicator that builds on performance reference...
points, an activity variable, and a numeric scale with positive and negative values. The social performance indicator obtained (+0.42 over a range of –2 to +2) shows that the deployment of the solar power plant increases the social welfare of Spain, especially in the impact categories of socioeconomic sustainability and fairness of relationships, whose results were 1.38 and 0.29, respectively.

**General information**

State: Published  
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Universidad Politécnica de Madrid  
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Scopus rating (2016): CiteScore 3.14 SJR 1.244 SNIP 1.32  
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Scopus rating (2014): SJR 1.628 SNIP 1.706 CiteScore 3.07  
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Scopus rating (2013): SJR 1.171 SNIP 1.405 CiteScore 2.47  
ISI indexed (2013): ISI indexed yes  
Web of Science (2013): Indexed yes  
BFI (2012): BFI-level 2  
Scopus rating (2012): SJR 1.03 SNIP 1.529 CiteScore 2.24  
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Web of Science (2012): Indexed yes  
BFI (2011): BFI-level 2  
Scopus rating (2011): SJR 1.031 SNIP 1.228 CiteScore 2.13  
ISI indexed (2011): ISI indexed yes  
BFI (2010): BFI-level 2  
Scopus rating (2010): SJR 0.891 SNIP 1.329  
Web of Science (2010): Indexed yes  
BFI (2009): BFI-level 2  
Scopus rating (2009): SJR 1.192 SNIP 1.411  
BFI (2008): BFI-level 2  
Scopus rating (2008): SJR 1.226 SNIP 1.624  
Web of Science (2008): Indexed yes  
Scopus rating (2007): SJR 1.165 SNIP 1.686  
Scopus rating (2006): SJR 1.039 SNIP 1.531  
Scopus rating (2005): SJR 0.614 SNIP 1.503  
Web of Science (2005): Indexed yes  
Scopus rating (2004): SJR 1.164 SNIP 1.946
Socio-technical change: Developing narratives for the Danish energy and transport sector

The choices of more sustainable technologies for citizens are highly dependent on political processes (Kern 2015). To secure impact on actual policy making, stakeholder participation from for instance researchers, policy makers and citizen, is crucial (Volkery and Ribeiro 2009). Although Denmark has the past years done much to increase the amount in of renewable energy in the energy system, the transport sector has not yet been included in the greening process (Sovacool 2013). The transport sector is responsible for almost a quarter of greenhouse emissions in EU, whereof two thirds originate from road transports (EU, 2014). Thus it is important to focus on political actors and processes within socio-technical transitions on this area.

The paper is based on the COMETS project, which main focus is policy advice in the Danish energy and transport sector to achieve a fossil-fuel free energy system in 2050. The data consists of workshops where scientists and stakeholders propose a set of narrative scenarios; a range of interviews; a citizen meeting, where a representative group of the public evaluates the proposed narratives; a future panel in the parliament where the energy groups evaluates scenarios.

Different actors can be enrolled into a coalition of change through narratives which include and organise visions and expectations (Smith, Stirling, and Berkhout 2005). Central to this study is the question of how different actors in the Danish energy and transport sector envision possible futures through a scenario planning process. This study investigates the disputes between actors and their conflicting interests in the political arena dedicated to the reproduction of the current regime with an actor-network approach.

In this study we conclude on how different actor groups create and evaluate future scenarios emphasizing the conflicts within the arena among the actor groups.

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Authors: Hansen, M. (Intern)
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Solving the pre-marshalling problem to optimality with A* and IDA*

We present a novel solution approach to the container pre-marshalling problem using the A* and IDA* algorithms combined with several novel branching and symmetry breaking rules that significantly increases the number of pre-marshalling instances that can be solved to optimality. A* and IDA* are graph search algorithms that use heuristics combined with a complete graph search to find optimal solutions to problems. The container pre-marshalling problem is a key problem for container terminals seeking to reduce delays of inter-modal container transports. The goal of the container pre-marshalling problem is to find the minimal sequence of container movements to shuffle containers in a set of stacks such that the resulting stacks are arranged according to the time each container must leave the stacks. We evaluate our approach on three well-known datasets of pre-marshalling problem instances, solving over 500 previously unsolved instances to optimality, which is nearly twice as many instances as the current state-of-the-art method solves.

General information
State: Published
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Main Research Area: Technical/natural sciences
Source-to-exposure assessment with the Pangea multi-scale framework – case study in Australia

Effective planning of airshed pollution mitigation is often constrained by a lack of integrative analysis able to relate the relevant emitters to the receptor populations at risk. Both emitter and receptor perspectives are therefore needed to consistently inform emission and exposure reduction measures. This paper aims to extend the Pangea spatial multi-scale multimedia framework to evaluate source-to-receptor relationships of industrial sources of organic pollutants in Australia. Pangea solves a large compartmental system in parallel by block to determine arrays of masses at steady-state for 100 000+ compartments and 4000+ emission scenarios, and further computes population exposure by inhalation and
ingestion. From an emitter perspective, radial spatial distributions of population intakes show high spatial variation in intake fractions from 0.68 to 33 ppm for benzene, and from 0.006 to 9.5 ppm for formaldehyde, contrasting urban, rural, desert, and sea source locations. Extending analyses to the receptor perspective, population exposures from the combined emissions of 4101 Australian point sources are more extended for benzene that travels over longer distances, versus formaldehyde that has a more local impact. Decomposing exposure per industrial sector shows petroleum and steel industry as the highest contributing industrial sectors for benzene, whereas the electricity sector and petroleum refining contribute most to formaldehyde exposures. The source apportionment identifies the main sources contributing to exposure at five locations. Overall, this paper demonstrates high interest in addressing exposures from both an emitter perspective well-suited to inform product oriented approaches such as LCA, and from a receptor perspective for health risk mitigation.

General information
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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Queensland, University of Michigan
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Scopus rating (2016): CiteScore 2.79 SJR 1.023 SNIP 0.938
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.006 SNIP 0.913 CiteScore 2.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.051 SNIP 1.054 CiteScore 2.21
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.992 SNIP 0.951
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.033 SNIP 0.868
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.954 SNIP 0.902
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.989 SNIP 0.715
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.088 SNIP 0.985
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.889 SNIP 0.907
Scopus rating (2007): SJR 0.777 SNIP 0.895
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.743 SNIP 0.819
Web of Science (2006): Indexed yes
Spatially explicit fate factors of waterborne nitrogen emissions at the global scale

Purpose: Marine eutrophication impacts due to waterborne nitrogen (N) emissions may vary significantly with their type and location. The environmental fate of dissolved inorganic nitrogen (DIN) forms is essential to understand the impacts they may trigger in receiving coastal waters. Current life cycle impact assessment (LCIA) methods apply fate factors (FFs) with limited specificity of DIN emission routes, and often lack spatial differentiation and global applicability. This paper describes a newly developed method to estimate spatially explicit FFs for marine eutrophication at a global scale and river basin resolution. Methods: The FF modelling work includes DIN removal processes in both inland (soil and river) and marine compartments. Model input parameters are the removal coefficients extracted from the Global NEWS 2-DIN model and residence time of receiving coastal waters. The resulting FFs express the persistence of the fraction of the original DIN emission in the receiving coastal large marine ecosystems (LMEs). The method further discriminates three DIN emission routes, i.e., diffuse emission from soils, and direct point emissions to freshwater or marine water. Based on modelling of individual river basins, regionally aggregated FFs are calculated as emission-weighted averages. Results and discussion: Among 5772 river basins of the world, the calculated FFs show 5 orders of magnitude variation for the soil-related emission route, 3 for the river-related, and 2 for emissions to marine water. Spatial aggregation of the FFs at the continental level decreases this variation to 1 order of magnitude or less for all routes. Coastal water residence time was found to show inconsistency and scarcity of literature sources. Improvement of data quality for this parameter is suggested. Conclusions: With the proposed method and factors, spatial information of DIN emissions can be used to improve the environmental relevance and the discriminatory power of the assessment of marine eutrophication impacts in a geographically differentiated characterization model at a global scale.
Stakeholder participation in CDM and new climate mitigation mechanisms: China CDM case study

Stakeholder participation is recognized as a key principle for effective climate governance. Climate mechanisms such as the Clean Development Mechanism (CDM), REDD+, and the Green Climate Fund (GCF) provide guidelines for local stakeholder consultation (LSC). However, little empirical research exists on how LSC is practised, and synergies between climate mechanisms are largely unexplored. This study explores how international LSC rules are practised at national and local levels. It aims to better shape future LSC in climate mechanisms by learning from the case of China. First, LSC policies in CDM, REDD+, and the Green Climate Fund (GCF) are identified. Relevant rules in China’s local policies are analysed. To understand the interaction between CDM policies and China’s local LSC rules, a selection of Chinese CDM Projects Design Documents (PDDs) are analysed, providing an overall impression of the stakeholder process and results. Afterwards, we focus on a single case for an in-depth understanding of LSC in practice. Results point to the weakness of current CDM LSC rules and lack of good practice guidance, e.g. regarding who to consult, what approaches to be used, and when and how consultations shall take place. It also points to the lack of a clear relationship between global CDM policies and national LSC rules. The weaknesses of existing CDM LSC practices and procedures are not unique to the China case but are relevant to other countries and climate mechanisms. REDD+ and GCF provide good examples of LSC rules, where CDM can learn, share experiences, and explore synergies for future revisions.
China, Clean Development Mechanism, Climate governance, Stakeholder participation, Sustainable development

Electronic versions:
Dong_et_al._2015_CP.pdf
Stochastic modeling of near-field exposure to parabens in personal care products

Exposure assessment is a key step in determining risks to chemicals in consumer goods, including personal care products (PCPs). Exposure models can be used to estimate exposures to chemicals in the absence of biomonitoring data and as tools in chemical risk prioritization and screening. We apply a PCP exposure model based on the product intake fraction (PiF), which is defined as the fraction of chemical in a product that is taken in by the exposed population, to estimate chemical intake based on physicochemical properties and PCP usage characteristics. The PiF can be used to estimate route and pathway-specific exposures during both the use and disposal stages of a product. As a case study, we stochastically quantified population level exposures to parabens in PCPs, and compared estimates with biomarker values. We estimated exposure based on the usage of PCPs in the female US population, taking into account population variability, product usage characteristics, paraben occurrence in PCPs and the PiF. Intakes were converted to urine levels and compared with National Health and Nutrition Examination Survey (NHANES) biomonitoring data. Results suggest that for parabens, chemical exposure during product use is substantially larger than environmentally mediated exposure after product disposal. Modeled urine concentrations reflect well the NHANES variation of three orders of magnitude across parabens for the 50th, 75th, 90th, and 95th percentiles and were generally in good agreement with measurements, when taking uncertainty into account. This study presents an approach to estimate multi-pathway exposure to chemicals in PCPs and can be used as a tool within exposure-based screening of chemicals as well in higher tier exposure estimates.

General information
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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Michigan
Authors: Csiszar, S. A. (Ekstern), Ernstoff, A. (Intern), Fantke, P. (Intern), Jolliet, O. (Ekstern)
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Scopus rating (2016): CiteScore 2.8 SJR 1.174 SNIP 1.08
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BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.294 SNIP 1.222 CiteScore 2.77
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.598 SNIP 1.326 CiteScore 3.07
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.27 SNIP 1.132 CiteScore 2.6
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.338 SNIP 1.162 CiteScore 2.66
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.467 SNIP 1.345 CiteScore 2.47
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.746 SNIP 1.193
Strategic assessment of capacity consumption in railway networks: Framework and model

In this paper, we develop a new framework for strategic planning purposes to calculate railway infrastructure occupation and capacity consumption in networks, independent of a timetable. Furthermore, a model implementing the framework is presented. In this model different train sequences are generated and assessed to obtain timetable independence. A stochastic simulation of delays is used to obtain the capacity consumption. The model is tested on a case network where four different infrastructure scenarios are considered. Both infrastructure occupation and capacity consumption results are obtained efficiently with little input. The case illustrates the model's ability to quantify the capacity gain from infrastructure scenario to infrastructure scenario which can be used to increase the number of trains or improve the robustness of the system.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Rambøll Danmark A/S, Erasmus University Rotterdam
Authors: Jensen, L. W. (Intern), Landex, A. (Intern), Nielsen, O. A. (Intern), Kroon, L. G. (Ekstern), Schmidt, M. (Ekstern)
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Scopus rating (2016): CiteScore 4.43 SJR 1.935 SNIP 2.531
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.941 SNIP 2.678 CiteScore 4.23
Web of Science (2015): Indexed yes
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Strategic sourcing and procurement of facilities management services

Purpose: The purpose is to provide insights into strategic sourcing concerning Facilities Management (FM) and how it can contribute to a sourcing decision that combines the benefits of internal and external provision with consideration of business risk and cost.

Design/methodology/approach: The paper investigates a strategic sourcing and procurement process in a large public organisation in Denmark based on participating in internal meetings, a workshop, document studies and interviews. The process is compared to a new ISO standard with guidance on strategic sourcing and development of FM agreements.

Findings: A problem in the new ISO standard is that it is based on a sequential model starting with detailing the demand and needs before investigating sourcing option. The case shows that the way needs are specified are depending on the chosen sourcing models. Based on a thorough analysis the organisation decided to change the sourcing strategy with insourcing the most critical building related activities and changing the procurement strategy from one integrated FM contract to 3 bundled and 7 single service contracts. The concept of right-sourcing is discussed.

Research limitations/implications: The research is based on a study of one public organisation, which limits the possibility to generalise the results. However, it provides detailed insights into the strategic sourcing process in FM, which can give inspiration for practitioners and further research.
Strategic, Tactical and Operational University Timetabling

University education is delivered via lectures and classes that are attended by students. When and where these classes are taught is determined by the timetable. A timetable has many stakeholders, and it is the task of planners to accommodate their needs as far as possible, as it has a significant influence on the daily life of both staff and students. Furthermore, it has a large impact on the use of the university’s resources. Rooms are a significant cost, and as many are allocated specifically to teaching it is important that the planners optimize their use. Creating a high-quality timetable is, therefore, essential to providing an excellent education, while at the same time using the university’s resources efficiently. This thesis presents an introduction to the university course timetabling problem and its different formulations. Although university timetabling has been widely studied in the literature, work has focused on the creation of a schedule once all of the available resources have been determined, called the course assignment problem. This thesis broadens the perspective by also investigating the decision problems that must be solved before and after the course assignment problem. One important problem is to determine the necessary resources. This thesis formulates the room planning problem that determines which rooms are available, and the teaching periods problem that determines timeslots for teaching. It then analyzes how the available resources affect the quality of the timetable. Once the timetable has been generated, there can be disruptions. This thesis investigates the quality recovering problem, which addresses this issue. In this case, an important constraint is that the new solution must be similar to the initial one, but not degrade the quality of the timetable. Solution methods are presented to these four problems. These are based on mixedinteger programming, and the same underlying model is used in different ways to solve decision problems that occur at different levels of the organization. All methods are tested on the curriculum-based course timetabling problem used for the Second International Timetabling Competition, which is the most-studied problem formulation in the literature. Finally, this thesis suggests potential directions for future research, which aims to ensure that there are tangible benefits for planners and universities.

General information
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Organisations: Department of Management Engineering, Management Science, Operations Research
Authors: Lindahl, M. (Intern), Stidsen, T. J. R. (Intern), Sørensen, M. (Intern)
Number of pages: 122
Publication date: 2017
Main Research Area: Technical/natural sciences

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Main Research Area: Technical/natural sciences
Electronic versions: MLindahl_UniversityTimetabling.pdf
Structured Literature Review of Electricity Consumption Classification Using Smart Meter Data

Smart meters for measuring electricity consumption are fast becoming prevalent in households. The meters measure consumption on a very fine scale, usually on a 15 min basis, and the data give unprecedented granularity of consumption patterns at household level. A multitude of papers have emerged utilizing smart meter data for deepening our knowledge of consumption patterns. This paper applies a modification of Okoli’s method for conducting structured literature reviews to generate an overview of research in electricity customer classification using smart meter data. The process assessed 2099 papers before identifying 34 significant papers, and highlights three key points: prominent methods, datasets and application. Three important findings are outlined. First, only a few papers contemplate future applications of the classification, rendering papers relevant only in a classification setting. Second; the encountered classification methods do not consider correlation or time series analysis when classifying. The identified papers fail to thoroughly analyze the statistical properties of the data, investigations that could potentially improve classification performance. Third, the description of the data utilized is of varying quality, with only 50% acknowledging missing values impact on the final sample size. A data description score for assessing the quality in data description has been developed and applied to all papers reviewed.
Structured Literature Review of Electricity Consumption Classification Using Smart Meter Data

**General information**
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Tureczek, A. M. (Intern)
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Main Research Area: Technical/natural sciences

**Structured vendor-client relationships—a combinatorial approach**
Purpose—Vendor-client (VC) relationships play an important role to a company’s general strategy and goals. However, managing these relationships can be a complex undertaking. The purpose of this paper is to assist in identifying the most important factors in assessing a VC relationship and provide a framework leading to a heuristically determined optimal solution for a company.

Design/methodology/approach—Weighting Factor Comparison (WFC) and scale metrics are used in order to holistically determine a firm’s position regarding relationships with potential vendors. Each contributing factor is analyzed separately using different sub-frameworks, both qualitative and quantitative. Eventually a score is provided, which will be used as input for the holistic framework for the realization of the analysis. Data from a case study of a large multinational company and its relationship with three of its vendors has been used for validation purposes, whereas other factors have been compared to empirical data from literature research.

Findings—The framework presented combines various approaches when handling vendor-client relationships and, therefore, minimizes subjectivity. The factors that have been proven significant for the company’s VC relationship are, in order of significance from higher to lower, Compatibility, Risk, Quality, and Cost.

Practical implications—This study offers a holistic decision making framework for practitioners for continuously determining the most adventitious relationship state between the firm and the various suppliers.

Further research—All frameworks, including the general VC framework, are advised to be implemented to companies.

Originality/value—Although research material is quite extensive regarding various approaches about supplier selection, it is very limited in relation to the evaluation of a vendor-client relationship. Furthermore, when such a relationship is evaluated, only one conceptual framework is chosen, leading to several limitations. This paper combines different frameworks in order to create a holistic framework which incorporates several parameters to determine the value of a vendor-client relationship; thereby exposing potential weaknesses and/or strengths of the relationship.

**Studying creativity training programs: A methodological analysis**
Throughout decades of creativity research, a range of creativity training programs have been developed, tested, and analyzed. In 2004 Scott and colleagues published a meta-analysis of all creativity training programs to date, and the review presented here sat out to identify and analyze studies published since the seminal 2004 review. Focusing on quantitative studies of creativity training programs for adults, our systematic review resulted in 22 publications. All studies
were analyzed, but comparing the reported effectiveness of training across studies proved difficult due to methodological inconsistencies, variations in reporting of results as well as types of measures used. Thus a consensus for future studies is called for to answer the question: Which elements make one creativity training program more effective than another? This is a question of equal relevance to academia and industry, as creativity training is a tool that can contribute to enhancement of organizational creativity and subsequently innovation. However, to answer the question, future studies of creativity training programs need to be carefully designed to contribute to a more transparent landscape. Thus this paper proposes a methodological research standard consisting of three criteria, to which researchers can look when designing future studies of the effectiveness of creativity training.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Valgeirsdóttir, D. (Intern), Onarheim, B. (Intern)
Number of pages: 10
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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 1.9 SJR 0.681 SNIP 1.186
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.655 SNIP 1.275 CiteScore 1.85
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.552 SNIP 1.071 CiteScore 1.38
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.32 SNIP 0.58 CiteScore 0.92
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 2
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 2
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BFI (2008): BFI-level 1
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10.1111/caim.12245
Source: FindIt
Source-ID: 2393628550
Publication: Research - peer-review › Journal article – Annual report year: 2017

This review of the literature collects innovative market mechanisms that tend to get overlooked in the discussion of whether unassisted energy-only markets can ensure sufficient capacity or if capacity remuneration mechanisms are required.
The paper complements existing literature reviews and pinpoints advantageous research areas relating to the market design of electricity systems with high shares of variable renewable energy.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Transport DTU
This paper identifies commercial sectors suitable for a shift to electric mobility in Denmark and Germany by analysing daily driving distance. The paper concludes that construction, human health and other service sectors are the most suitable sectors for electric mobility because many vehicles are registered in these sectors and daily mileage is reasonably low. They should be primary target groups of specific policy measures to promote the use of electric vehicles. Both Denmark and Germany have incentives to promote the use of electric vehicles. Nevertheless, electric vehicles do generally not show economic benefits unless travel distance is high. However, today the travel range of large vans is an important barrier for electrification due to battery weight and the limitation of 3.5 tonnes gross vehicle weight for driving with a normal driving licence. The rule needs amendments for electric vehicles, as has been done in Germany. The paper recommends EU countries follow the German rule allowing EVs up to 4.25 tonnes to be driven with a class B licence, thereby potentially creating a market for big vans with long travel range.
Supporting the development of shared understanding in distributed design teams

Distributed teams are an increasingly common feature of engineering design work. One key factor in the success of these teams is the development of short- and longer-term shared understanding. A lack of shared understanding has been recognized as a significant challenge, particularly in the context of globally distributed engineering activities. A major antecedent for shared understanding is question asking and feedback. Building on question-asking theory, this work uses a quasi-experimental study to test the impact of question-asking support on homogeneous and heterogeneous teams. The results show significant improvement in shared understanding for both team types (27% improvement for heterogeneous and 16% for homogeneous), as well as substantial differences in how this improvement is perceived. This extends theoretical insight on the development of shared understanding and contributes one of few empirical studies directly comparing homogeneous and heterogeneous teams in the engineering design context. This has implications for how distributed teams can be more effectively supported in practice, as well as how shared understanding can be facilitated in engineering design.
Assessments of urban metabolism (UM) are well situated to identify the scale, components, and direction of urban and energy flows in cities and have been instrumental in benchmarking and monitoring the key levers of urban environmental pressure, such as transport, space conditioning, and electricity. Hitherto, urban food consumption has garnered scant attention both in UM accounting (typically lumped with “biomass”) and on the urban policy agenda, despite its relevance to local and global environmental pressures. With future growth expected in urban population and wealth, an accounting of the environmental footprint from urban food demand (“foodprint”) is necessary. This article reviews 43 UM assessments including 100 cities, and a total of 132 foodprints in terms of mass, carbon footprint, and ecological footprint and situates it relative to other significant environmental drivers (transport, energy, and so on) The foodprint was typically the third largest source of mass flows (average is 0.8 tonnes per capita per annum) and carbon footprint (average is 1.9 tonnes carbon dioxide equivalents per capita per annum) in the reviewed cities, whereas it was generally the largest driver of urban ecological footprints (average is 1.2 global hectares per capita per annum), with large deviations based on wealth, culture, and urban form. Meat and dairy are the primary drivers of both global warming and ecological footprint impacts, with little relationship between their consumption and city wealth. The foodprint is primarily linear in form, producing significant organic exhaust from the urban system that has a strong, positive correlation to wealth. Though much of the foodprint is
embodied within imported foodstuffs, cities can still implement design and policy interventions, such as improved nutrient recycling and food waste avoidance, to redress the foodprint.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Massachusetts Institute of Technology
Authors: Goldstein, B. P. (Intern), Birkved, M. (Intern), Fernandez, J. (Ekstern)
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Journal: Journal of Industrial Ecology
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ISSN (Print): 1088-1980
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.14 SJR 1.244 SNIP 1.32
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.44 SNIP 1.689 CiteScore 3.82
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.628 SNIP 1.706 CiteScore 3.07
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.171 SNIP 1.405 CiteScore 2.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.03 SNIP 1.529 CiteScore 2.24
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.031 SNIP 1.228 CiteScore 2.13
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.891 SNIP 1.329
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.192 SNIP 1.411
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.226 SNIP 1.624
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.165 SNIP 1.686
Scopus rating (2006): SJR 1.039 SNIP 1.531
Scopus rating (2005): SJR 0.614 SNIP 1.503
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.164 SNIP 1.946
Scopus rating (2003): SJR 0.61 SNIP 1.131
Scopus rating (2002): SJR 0.433 SNIP 1.147
Sustainability assessment of stormwater management systems

We quantify ecotoxicity impacts caused by different solutions to manage stormwater using life cycle assessment. As a novelty, we include emissions of a wide range of pollutants present in runoff. These emissions turn out to be of great importance, especially in decentralized, above surface systems.

General information
State: Published
Organisations: Department of Environmental Engineering, Urban Water Systems, Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Brudler, S. (Intern), Arnbjerg-Nielsen, K. (Intern), Ammitsøe, C. (Ekstern), Hauschild, M. Z. (Intern), Rygaard, M. (Intern)
Number of pages: 2
Publication date: 2017
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Source: PublicationPreSubmission
Source-ID: 138476959
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017

Sustainability labelling of climate mitigation actions relevant to Article 6 of the Paris Agreement

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Olsen, K. H. (Intern), Bakhtiari, F. (Intern)
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Host publication information
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Article number: X-5
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Conference: Sustain 2017, Kgs. Lyngby, Denmark, 06/12/2017 - 06/12/2017
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SustainAbstracts2017c.compressed_181.pdf
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

Sustainable solar home systems model: Applying lessons from Bangladesh to Myanmar's rural poor

Myanmar’s rural population has very low access to electricity, mainly due to low disposal income and the remoteness of communities. This paper attempts to test the potential applicability of Grameen Shakti-Infrastructure Development Company Limited (IDCOL), which is a Bangladeshi public private partnership microfinance model, to rural Myanmar towards enhanced solar home systems (SHS) deployment. Rural poor are enabled by this microfinancing scheme to own SHSs in a few years for as low as US$6.40 per month. The objectives of this paper are to assess the experience of Grameen Shakti-IDCOL and other similar projects for invaluable lessons, identify barriers to sustainable electrification for Myanmar’s rural poor and to apply these lessons learned to overcome barriers by developing policy recommendations for sustainable electrification for rural poor in Myanmar. Recommendations are provided suggesting the revision of some
assumptions in the National Electrification Plan (NEP) and the creation of a microfinance-based public private partnership, with a polycentric structure, strong local presence and effective after sales service, to increase the deployment of SHSs to sustainably and economically supply modern energy to Myanmar's rural poor.

**General information**

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Organisations: Department of Management Engineering, UNEP DTU Partnership, Technical University of Denmark
Authors: Newcombe, A. (Ekstern), Ackom, E. (Intern)
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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.12 SJR 1.298 SNIP 1.426
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.387 SNIP 1.35 CiteScore 2.92
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.25 SNIP 1.552 CiteScore 2.69
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.712 SNIP 1.912 CiteScore 3.32
Scopus rating (2012): SJR 1.234 SNIP 1.323 CiteScore 2.63
Scopus rating (2011): SJR 0.741 SNIP 1.145 CiteScore 1.83
Scopus rating (2010): SJR 0.484 SNIP 0.548
Scopus rating (2009): SJR 0.391 SNIP 0.689
Scopus rating (2008): SJR 0.379 SNIP 0.609
Scopus rating (2007): SJR 0.564 SNIP 0.864
Scopus rating (2006): SJR 0.228 SNIP 0.578
Scopus rating (2005): SJR 0.398 SNIP 0.55
Scopus rating (2004): SJR 0.212 SNIP 0.382
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.373 SNIP 0.639
Scopus rating (2002): SJR 0.184 SNIP 0.262
Scopus rating (2001): SJR 0.267 SNIP 0.088
Scopus rating (2000): SJR 0.102 SNIP 0.214
Scopus rating (1999): SJR 0.1 SNIP 0.227
Original language: English
Myanmar, Rural poor, Microfinance, Solar home systems, Electrification

**Sustainable supply chains in the world of industry 4.0**

**Purpose:**

Industry 4.0 introduces a series of changes for the supply chain, in particular in terms of technology, structure, connectivity and communication. This presents companies with new opportunities but also new challenges. These emerging trends are affecting the supply chain at a social, economical and environmental level. The sustainable aspect in Industry 4.0 is highly correlated with digitization at a process, product and organizational level (Reichel, 2017). This paper presents a framework for the implementation of Industry 4.0 technologies in new and current bussiness processes while aligning with holistic sustainability goals.
Sustainable Transitions on the Move - Guiding Visions for a Circular Bioeconomy in Scandinavia

Grand societal challenges such as climate change, ageing population and food security feature increasingly on the agenda of policymakers at all scales. While traditional mission-oriented research and innovation policies were largely framed in technical terms, challenge-based policies claim to be less instrumental and more open-ended. One cannot simply specify the problem and develop a diagnosis but one needs to learn about the nature of the grand challenge in order to address it. This implies greater deliberation and contestation, both with respect to policy aims and means, and involves new actor constellations that include a larger variety of actors, and consider new roles for traditional actors (Kuhlmann and Rip 2014). Even if policies start to be aimed at addressing these challenges, this new framing of research and innovation policies is still under-developed and it remains unclear how to implement such policies (Coenen et al. 2015; Schot and Steinmüller 2016).

Synlig aktivitet ved vejarbejde sænker fart

I en ny norsk undersøgelse har man set på, om synlig aktivitet i forbindelse med vejarbejde har betydning for bilisters foretrakte kørehastighed. Analysen viste, at bilister foretrakker en lavere kørehastighed, når der er synlig aktivitet og når de oplever, at der er en god grund til at sænke farten. Dette er vigtigt at tænke ind i forebyggende tiltag, der skal bidrage til en sikker kørehastighed blandt bilister.

Systematic Problem Solving in Production: The NAX Approach

This paper outlines the NAX problem solving approach developed by a group of problem solving experts at a large Danish Producer of medical equipment. The company, "Medicmeter" is one of Denmark’s leading companies when it comes to lean and it has developed a strong problem solving culture. The main steps of the approach are to extensively gather direct detailed process knowledge at the actual process, assemble a team that systematically builds on each other ideas, apply team thinking in a structured way to get a rapid and very deep understanding of the problem, and conducting a structured deselection of hypothetical causes to uncover the true root causes. What sets this approach apart from other is
that it contains a guide of how to facilitate these steps. A case study was performed in a production department at Medicmeter to demonstrate its effectiveness and reproducibility. It resulted in a close to 60% reduction of the issue concerned.

**General information**

State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Technical University of Denmark
Authors: Axelsdottir, A. (Ekstern), Nygaard, M. (Ekstern), Edwards, K. (Intern)
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Volume: 45
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ISSN (Print): 0360-8581
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.11 SJR 0.129 SNIP 0.821
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.117 SNIP 0.94 CiteScore 0.07
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.1 SNIP 0 CiteScore 0.03
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.108 SNIP 0 CiteScore 0.12
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.101 SNIP 0 CiteScore 0.04
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.103 SNIP 0 CiteScore 0.06
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.112 SNIP 0.035
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.108 SNIP 0.339
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.105 SNIP 0.123
Scopus rating (2007): SJR 0.109 SNIP 0.172
Scopus rating (2006): SJR 0.108 SNIP 0.033
Scopus rating (2005): SJR 0.102 SNIP 0.023
Scopus rating (2004): SJR 0.111 SNIP 0.19
Scopus rating (2003): SJR 0.122 SNIP 0.084
Scopus rating (2002): SJR 0.157 SNIP 0.255
Scopus rating (2001): SJR 0.117 SNIP 0.084
Scopus rating (2000): SJR 0.11 SNIP 0.054
Scopus rating (1999): SJR 0.126 SNIP 0.492
Original language: English
Electronic versions:
Systematic_Problem_Solving_in_Production_submission_22.aug2016_v2.pdf
07888804.pdf
DOIs:
10.1109/EMR.2017.2667178
Source: PublicationPreSubmission
Source-ID: 127807174
Publication: Research - peer-review › Journal article – Annual report year: 2017
System-Level Sensitivity Analysis of SiNW-bioFET-Based Biosensing Using Lockin Amplification

Although Silicon Nanowire biological Field-Effect Transistors (SiNW-bioFETs) have steadily demonstrated their ability to detect biological markers at ultra-low concentration, they have not yet translated into routine diagnostics applications. One of the challenges inherent to the technology is that it requires an instrumentation capable of recovering ultra-low signal variations from sensors usually designed and operated in a highly-resistive configuration. Often overlooked, the SiNWbioFET/instrument interactions are yet critical factors in determining overall system biodetection performances. Here, we carry out for the first time the system-level sensitivity analysis of a generic SiNW-bioFET model coupled to a custom-design instrument based on the lock-in amplifier. By investigating a large parametric space spanning over both sensor and instrumentation specifications, we demonstrate that systemwide investigations can be instrumental in identifying the design trade-offs that will ensure the lowest Limits-of-Detection. The generic character of our analytical model allows us to elaborate on the most general SiNW-bioFET/instrument interactions and their overall implications on detection performances. Our model can be adapted to better match specific sensor or instrument designs to either ensure that ultra-high sensitivity SiNW-bioFETs are coupled with an appropriately sensitive and noise-rejecting instrumentation, or to best tailor SiNW-bioFET design to the specifications of an existing instrument.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Department of Micro- and Nanotechnology, Nano Bio Integrated Systems, Center for Bachelor of Engineering Studies, Afdelingen for El-teknologi, Copenhagen Center for Health Technology, Department of Applied Mathematics and Computer Science, Embedded Systems Engineering
Authors: Patou, F. (Intern), Dimaki, M. (Intern), Kjærgaard, C. (Intern), Madsen, J. (Intern), Svendsen, W. E. (Intern)
Pages: 6295-6311
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Main Research Area: Technical/natural sciences

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Journal: IEEE Sensors Journal
Volume: 17
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Ratings:
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.12 SJR 0.706 SNIP 1.689
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.684 SNIP 1.908 CiteScore 2.85
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.799 SNIP 1.934 CiteScore 2.5
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.666 SNIP 1.811 CiteScore 2.6
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.602 SNIP 1.445 CiteScore 2.09
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.572 SNIP 1.421 CiteScore 2.13
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.533 SNIP 1.077
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.631 SNIP 1.351
System Reliability of Bridge Structure Subjected to Chloride Ingress

General information
State: Published
Organisations: Department of Civil Engineering, Section for Structural Engineering, Department of Management Engineering, Norwegian University of Science and Technology
Authors: Leira, B. J. (Ekstern), Thöns, S. (Intern), Faber, M. H. (Intern)
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Publication date: 2017

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Conference: Joint COST TU1402 - COST TU1406 - IABSE WC1 Workshop, Zagreb, Croatia, 02/03/2017 - 02/03/2017
System reliability, Enhanced Monte Carlo, Chloride ingress, Bridge test data
Source: PublicationPreSubmission
Source-ID: 132301322
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Taking stock of the (I)NDCs of developing countries: regional (I)NDC coverage of mitigation sectors and measures

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Schletz, M. C. (Intern), Konrad, S. (Intern), Staun, F. (Intern), Desgain, D. D. (Intern)
Number of pages: 42
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Main Research Area: Technical/natural sciences
Electronic versions:
NDC_Analysis_2017.pdf
Source: PublicationPreSubmission
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Publication: Research › Report – Annual report year: 2017
Team cohesion in intensive care nursing: at the interface of nurse self-concept and unit structure

Team cohesion is a critical factor in the provision of high-quality care, yet its antecedents remain understudied, particularly in the context of some healthcare professional groups where structural and individual constraints coexist, and demand for high quality performance is prevailing. In this study, we focus on the nursing group in intensive care units (ICU). Not researched, yet important for employee attitudes towards their workplaces and workgroups, is the interface between the characteristics of individual care providers and those of the teams and organizations in which they are employed. This study examines the effects of three levels of self-concept—individual, relational, and collective—and ICU structural characteristics such as size (number of nurses), nurse training profile, and number of beds. These factors are investigated as they jointly shape the degree to which nurses perceive their teams as cohesive. A multi-source and multi-level study of approximately 140 nurses employed in 20 ICUs across Denmark demonstrates the critical role of self-concept in easing and enhancing the constraints workplaces impose on team cohesion. Furthermore, the study confirms the positive relationship between overall team member-rated cohesion and manager-rated quality of care. Hence, understanding the interplay among self-concept, ICU structural characteristics, and team cohesion is highly relevant to enhancing quality of care.

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State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Copenhagen Business School
Authors: Paunova, M. (Ekstern), Li-Ying, J. (Intern)
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Main Research Area: Technical/natural sciences
Conference: 77th Annual meeting of the Academy of Management, Atlanta, United States, 04/08/2017 - 04/08/2017
Electronic versions:
10720_Paunova_Li_Proceedings_JLY.pdf. Embargo ended: 01/01/2018
DOIs:
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Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Technological Innovation and Beyond: Exploring Public Value of University Inventions Based on Contingent Effectiveness Model

University inventions are traditionally seen as significant input into development of new technologies and innovations in the market as they generate growth and regional development. (REF) Yet, these inventions developed into new technologies can simultaneously create public values such as those that are related with sustainability goals. In this paper, we apply the Contingent Effectiveness Model by Bozeman et.al. (2015) as a framework to consider the effectiveness of technology transfer from university to industry via licensing, and examine what values derive during the commercialization process of university inventions. We define four main values: technological, economic, social and environmental, and place the latter two under the concept of public value. The aim of this paper is to expand the understanding of public value and incorporate it into technology transfer literature. We assign to the concept of public value a measurement tool, thus, making public value a measurable concept. Therefore, this study not only extends conceptual and theoretical considerations of public value (Jørgensen and Bozeman 2007), but it also provides evidence based on collected data. A unique data set from survey of university licensee companies reveals that university inventions that are accomplished technologically, often create added public value, social or environmental, or both.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Milana, E. (Intern), Li-Ying, J. (Intern), Faria, L. (Intern)
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Main Research Area: Technical/natural sciences
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Testing the slope model of scheduling preferences on stated preference data

The valuation of travel time variability is derived either from a structural model, given information on departure time, or directly from a reduced-form model where departure time is assumed to be optimally chosen. The two models are theoretically equivalent under certain assumptions, hence are expected to yield similar results. We use stated preference data to compare the valuation of travel time variability under a structural model where trip-timing preferences are defined in terms of time-dependent utility rates, the "slope model", against its reduced-form model. Two choice experiments are used that are identical except one has a fixed departure time while the other allows respondents to choose departure time freely. The empirical results in this paper do not support the theoretical equivalence of the two models as the implied value of travel time variability under the reduced-form model is an order of magnitude larger. This finding, which is robust to various specification tests, is in line with a recent Swedish study by Börjesson, Eliasson and Franklin [Transportation Research Part B: Methodological, 46(7), 855–873 (2012)]. Since our data allows a direct comparison of the two approaches, we are able to rule out some potential explanations lined up by past research for the observed discrepancy between the two models.

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Authors: Abegaz, D. F. (Intern), Hjorth, K. (Intern), Rich, J. (Intern)
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The absolute environmental performance of buildings

Our paper presents a novel approach for absolute sustainability assessment of a building’s environmental performance. It is demonstrated how the absolute sustainable share of the earth carrying capacity of a specific building type can be estimated using carrying capacity based normalization factors. A building is considered absolute sustainable if its annual environmental burden is less than its share of the earth environmental carrying capacity. Two case buildings – a standard house and an upcycled single-family house located in Denmark – were assessed according to this approach and both were found to exceed the target values of three (almost four) of the eleven impact categories included in the study. The worst-case excess was for the case building, representing prevalent Danish building practices, which utilized 1563% of the Climate Change carrying capacity. Four paths to reach absolute sustainability for the standard house were proposed focusing on three measures: minimizing environmental impacts from building construction, minimizing impacts from energy consumption during use phase, and reducing the living area per person. In an intermediate path, absolute sustainability can be obtained by reducing the impacts from construction by 89%, use phase energy consumption by 80%, and the living area by 60%.

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The accountability imperative for quantifying the uncertainty of emission forecasts: evidence from Mexico

The Paris Agreement, adopted in 2015, established the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal. The 2017 Adaptation Gap Report, which is the third global Adaptation Gap Report by UN Environment – prepared in collaboration with the Global Centre of Excellence on Climate Adaptation – focuses on one of the key questions arising in the wake of the global goal: What are the ways forward to assess progress towards the global goal on adaptation? The report explores key opportunities and challenges associated with assessing progress on adaptation at the global level. The report synthesizes information relevant for the ongoing work under the United Nations Framework Convention on Climate Change (UNFCCC) to prepare for the implementation of the Paris Agreement. In contrast to previous Adaptation Gap Reports, the 2017 report focuses on issues relating to frameworks, comprising concepts, methodologies and data, rather than on assessing a particular dimension of the adaptation gap. Future Adaptation Gap Reports will return to assessments of specific adaptation gaps.

An international team of experts, assessing the latest literature and practical experience within the topic area, has prepared the report. The process has been overseen by a steering committee, and all chapters have undergone extensive external review. The Paris Agreement’s global goal on adaptation provides a new starting point and impetus for assessing progress on adaptation at the global level, but additional information is required for assessing such progress. The global goal on adaptation provides a collective vision for the direction of global adaptation action. The goal is broad and multifaceted, and progress towards it will be reviewed in the context of the global stocktake specified in Article 14 of the Paris Agreement. The global stocktake will take place every five years starting in 2023, and include reviewing the overall progress in achieving the global goal on adaptation. In addition, the Paris Agreement contains two other provisions on adaptation that are important in the context of this report: the transparency framework and adaptation communications. These four provisions and the interlinkages between them are illustrated in Figure ES.1, further highlighting the global and national dimensions of the provisions.

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The Attentional Capture of Colour in Visual Interface Design: A Controlled Environment Study

The use of colour is an integral component in visual interface design for creating separation between objects and for conveying meaning. It has previously been established that colours can be separated in a hierarchy of primary colours and secondary colours, and that colours are consistently associated with specific mood tones. However, it has thus far not been investigated whether these two factors, which we refer to as the perception-primacy and emotion-conveyance, are associated with attentional capture in a congruent manner. To investigate this, we conducted a visual search task study in a controlled environment, in which 11 participants scanned a 20 item display for a coloured target amongst coloured distractors. We found evidence to support that primary colours capture attention significantly more than secondary colours, and inconclusive evidence that colours convey their meaning at a sufficiently early level of processing to influence attention. We end by discussing implications of our results for design practice and research in psychology.

General information
The Challenges of Applying Planetary Boundaries as a Basis for Strategic Decision-Making in Companies with Global Supply Chains

The Planetary Boundaries (PB) framework represents a significant advance in specifying the ecological constraints on human development. However, to enable decision-makers in business and public policy to respect these constraints in strategic planning, the PB framework needs to be developed to generate practical tools. With this objective in mind, we analyse the recent literature and highlight three major scientific and technical challenges in operationalizing the PB approach in decision-making: first, identification of thresholds or boundaries with associated metrics for different geographical scales; second, the need to frame approaches to allocate fair shares in the 'safe operating space' bounded by the PBs across the value chain and; third, the need for international bodies to co-ordinate the implementation of the measures needed to respect the Planetary Boundaries. For the first two of these challenges, we consider how they might be addressed for four PBs: climate change, freshwater use, biosphere integrity and chemical pollution and other novel entities. Four key opportunities are identified: (1) development of a common system of metrics that can be applied consistently at and across different scales; (2) setting ‘distance from boundary’ measures that can be applied at different scales; (3) development of global, preferably open-source, databases and models; and (4) advancing understanding of the interactions between the different PBs. Addressing the scientific and technical challenges in operationalizing the planetary boundaries needs be complemented with progress in addressing the equity and ethical issues in allocating the safe operating space between companies and sectors.

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The characteristics to consider in municipal shared spaces

Purpose
The purpose of this study is through collaboration with practitioners to identify key characteristics of municipal shared spaces and, based on these, developing a guide for establishing a shared space in a municipal real-estate portfolio.

Design/methodology/approach
This paper builds on existing theory on the subject of shared space as well as the practical experience of professionals within the fields of property management, space management and facilities management. The guide presented is the result of data collected through case studies, interviews, surveys and literature reviews. This knowledge is combined with data collected through a workshop with practitioners from municipalities and the private sector, to provide a final guide that is directly applicable as a tool for working with shared space as a part of a property management strategy.

Findings
The result presented is a guide to establishing a shared space in a municipal real-estate portfolio, created in collaboration between researchers and practitioners. It provides an introduction to the topic and outlines a number of tasks that must be completed in different parts of a project, thereby providing a tool which practitioners can use to realise shared space as a strategy in the context of public real-estate management.

Originality/value
The guide presented is a first in connecting theory with practical application and through collaboration between researchers and practitioners, creating a tool to be used when working with shared space in a municipal real-estate portfolio.
The Circular Economy: In Practice-focused Undergraduate Engineering Education

The growth of the planet's population makes the traditional industrial model of "take, make and waste" unsustainable. The circular economy, in which resources are continuously reused, offers a solution. For manufacturers of durable goods the circular economy requires a well-functioning circular supply chain that includes reverse logistics, product recovery operations, development of markets for recovered products, and integration of reuse and product recovery into the firm's daily operations. How to educate undergraduate practice-focused engineers in the design, implementation, and operation of circular supply chains is un-explored and the purpose of the paper is to identify a suitable teaching method. Because courses in circular supply chain topics are currently non existent, the paper first develops a set of learning goals based on the skillset necessary to design, implement, and operate a circular supply chain. Second, the paper examines whether the teaching method of a similar cross-disciplinary course in innovation can be successfully applied. This teaching method is based on cross-disciplinary team projects that work with innovation in cooperation with a participating firm. The study concludes that the teaching method can be (largely) applied. However, future research should test the paper's results with studies using data from circular supply chain courses.

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The COHERENT Project

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The documentation of product configuration systems: A framework and an IT solution

When designing and maintaining a product configuration system (PCS), complete and up-to-date documentation of the system is needed in the form of a product model that outlines the structures, attributes, and constraints of the PCS. Furthermore, up-to-date documentation for the PCS is crucial for maintenance, further development, system quality and communication with domain experts. Product models are the main communication and documentation tools used in PCS projects. Recent studies have shown that up-to-date documentation for the PCS is often lacking due to the significant amount of work required to maintain product models. To address these challenges, this paper proposes an approach for documenting the PCS that is based on the structure, attributes, and constraints modelled within the PCS, in which the product model is generated directly from the PCS. The suggested approach avoids knowledge duplication, as knowledge needs to be maintained within the PCS only. It involves two steps: the first is the building of the initial product model, which is used for the programming of the PCS. In the second step, the product model is generated directly from the PCS and is based on the structure, attributes, and constraints inside the PCS. The product model does not need to be maintained, therefore, outside the PCS. This approach meets the demand for agile documentation and efficient communication with domain experts, and uses the fewest resources possible. Furthermore, to support the framework, an IT documentation system is proposed that is capable of retrieving knowledge from the PCS and thus generating the product model. Our framework and IT documentation system were developed and tested at a case company on five different projects. The results confirm that benefits can be achieved by using the proposed IT documentation system, as time and resources are saved, while the quality of the PCS is improved.
The Effect of Path-Dependence and Uncertainty on the Value of Mature Technologies

This paper examines whether technological advances benefit more from path-dependent or path-creating capabilities. Consistently with recent advances in the literature, we argue that multiple technological trajectories can coexist in a field; therefore, firms may contribute to technological development by recombining in novel ways the capabilities that are widespread in the field, or by building novel and rare capabilities. The paper also conceptualises how technological uncertainty affects the value of such capabilities. Using patent data from 1977 to 2007 for firms developing the hydrocracking technology, the paper finds that both rare and widespread capabilities are valuable to the invention process, thereby suggesting that both path-dependent and path-creating strategies are beneficial for technological development. The paper shows that uncertainty has an inverted U-shaped effect on invention value. In particular, under conditions of low uncertainty, path-dependent capabilities tend to be more valuable.
The evolution of green food products and retailers' eco-strategizing and green competitiveness in the Danish and Brazilian grocery sector

Grounded on the evolutionary approach, this thesis adds an understanding about the dynamics of the greening of the economy, particularly highlighting the neglected demand side aspect of the greening of markets. Since the emergence of green food markets in the 1980s and 1990s, this study investigates the role of retail groups in the development of the green food market in Denmark and Brazil. Accordingly, it investigates the rate and direction of the greening of this process in those markets as well as their sectoral convergence of retailers' eco-strategizing. Using the dynamic capabilities framework, it examines why, how and when the eco-strategizing, green performance and competitiveness of grocery retail groups co-evolved with the development of the green food market in Denmark and Brazil. This thesis contributes innovatively to research on at least three more aspects. Firstly, it advances the existing literature in adding combined qualitative and quantitative longitudinal firm-level data, which is analysed over time through a framework composed by macro, meso and micro indicators of the green market development. Secondly, it provides the perspectives of the surveyed retail groups and market support stakeholders acting in the Danish and Brazilian green food markets. Thirdly, it provides estimation of the green food turnover in the Brazilian retail. This thesis concludes that major retail groups in Denmark and Brazil were not the pioneers in the green food market. Nonetheless, these large retailers in collaboration with local organic food producers and market support stakeholders were rather central in making the green food market a viable business case. These retail groups were key players in the evolution of the green food market as they have played a vital role in scaling up the Danish and Brazilian green food markets to higher turnover levels at least since the 1990s. Furthermore, these retail firms sensed the market potential for the green food products in the 1980s and 1990s and particularly in the 2000s and onwards, and through emergently deliberate eco-strategizing have been able to size and transform the green food market in Brazil and Denmark. These retailers' eco-strategizing implied innovative changes in their business models, which have become markedly greener in this period due to their role in the development of the Danish and Brazilian green food markets and hence the rise of a green business case. Finally, changes in their business models have become a central competitive driver to retailers in both countries, which enabled them to sustain competitive advantage on the greening of their food markets.

The Evolution of South-South Development Cooperation: Guiding Principles and Approaches

South-South Cooperation (SSC) has attracted the attention of the development community in terms of both its ‘impact’ on traditional aid and the integration of its values into the work of multilateral institutions, making it the new ‘buzzword’ of the aid community. However, few studies have been carried out to understand the rationale of SSC and how it influences the approaches followed in its development assistance activities or ‘South-South Development Cooperation’ (SSDC). Therefore, this article explores the origins and development of the SSC concept from the perspectives of southern countries and shows how they affect the narrative related to the implementation model of SSDC. The research uses a narrative literature review focusing on southern countries’ understandings of both SSC and SSDC, thus enabling two sets of categorization: one for the conceptual elements in the definition of SSC outside its geographical component and the other for the guiding principles and approaches of SSDC.
The Fear of Pain Questionnaire-III and the Fear of Pain Questionnaire-Short Form: a confirmatory factor analysis

Background: The Fear of Pain Questionnaire-III (FPQ-III) is a widely used instrument to assess the fear of pain (FOP) in clinical and nonclinical samples. The FPQ-III has 30 items and is divided into three subscales: Severe Pain, Minor Pain and Medical Pain. Due to findings of poor fit of the original three-factor FPQ-III model, the Fear of Pain Questionnaire-Short Form (FPQ-SF) four-factor model has been suggested as an alternative. The FPQ-SF is a revised version of the FPQ-III, reduced to 20 items and subdivided into four subscales: Severe Pain, Minor Pain, Injection Pain and Dental Pain.

Aims and methods: The purpose of the study was to investigate the model fit, reliability and validity of the FPQ-III and the FPQ-SF in a Norwegian nonclinical sample, using confirmatory factor analysis (CFA). The second aim was to explore
the model fit of the two scales in male and female subgroups separately, since previous studies have uncovered differences in how well the questionnaires measure FOP across sex; thus, the questionnaires might not be sex neutral. It has been argued that the FPQ-SF model is better because of the higher fit to the data across sex. To explore model fit across sex within the questionnaires, the model fit, validity and reliability were compared across sex using CFA. Results: The results revealed that both models’ original factor structures had poor fit. However, the FPQ-SF had a better fit overall, compared to the FPQ-III. The model fit of the two models differed across sex, with better fit for males on the FPQ-III and for females on the FPQ-SF. Conclusion: The FPQ-SF is a better questionnaire than the FPQ-III for measurement of FOP in Norwegian samples and across sex subgroups. However, the FPQ-III is a better questionnaire for males than for females, whereas the FPQ-SF is a better questionnaire for females than for males. The findings are discussed and directions for future investigations outlined.

The Financial Crisis and Diverging House Prices: Evidence from the Copenhagen Metropolitan Area: 2017-084/VIII
This paper investigates the development of house prices in Copenhagen in the period 1994-2013, while paying special attention to the heterogeneous impact of the boom and bust periods along the dimensions of housing type (single vs multifamily housing), geography and quality. To allow for price developments that can differ by quality, we use a recently developed generalization of the conventional Muth model that assumes a constant unit price across the quality spectrum. It allows us to separately consider the development of house prices and quality in Copenhagen neighbourhoods. Moreover, we investigate the validity of the common assumption of a constant unit price and reject it decisively. We use detailed housing transaction data for the greater Copenhagen area. We show that the housing boom of the 2000’s and the bust that followed hit the lowest quality segments significantly harder than the high quality segments of the housing market.
The FishBone workshop: How to transform

Problem A successful transformation is central for management and employee support and implementation fidelity (Carroll et al. 2007). Participatory interventions are a means to involve employees and managers in tailoring intervention initiatives to the needs of the organization. However, a central concern in such engaging processes is how to systematically process and transform the knowledge that employees and managers provide. There has been many different approaches to include employees in the development of intervention activities that fit the organization such as dialog workshops, custom made surveys, etc. In 2012, Ipsen and Jensen stated that in knowledge work both employees and managers possess tacit and individual knowledge about the problems associated with knowledge work, and about the causes and potential solutions. Therefore, the authors proposed to establish collective rooms for reflection as an organizational framework in which both managers and employees can participate and talk about the factors that affect quality and efficiency (Ipsen & Jensen 2012). The multi-level reflection should support the development of initiatives that aim to solve core task related problems. The aim of this study is to create central intervention initiatives that relate to core health and organizational processes based on manager and employee involvement in a systematic process. This paper presents a method designed for that purpose: The FishBone workshop. Procedures The purpose of the Fishbone workshop is to explore and identify work-related issues that relate to the organizational sources of employee well-being. In two FishBone workshops, employees and managers respectively, explore their work and workplace (Ipsen & Andersen 2013; Sørensen & Holman 2010), one for employees and one for managers. A thematization of the statements, which converge the statements into themes, follows the explorative and divergent phase. The participants at the employee workshop answer the question: “What creates enthusiasm in your work?” and write their statement on a Post-it note and place it on the FishBone chart labelled “Enthusiasm”. Successively, the participants fill out the Fishbone chart and when they have posted all notes, an image emerges of the factors that create enthusiasm at this particular workplace. The participants then reflect on: “What creates stress and strain in your work?” The participants post their written statements on a new FishBone chart labeled “Strain”. In cases where the answers are related, the post-it notes are clustered on one “side-bone” of the Fishbone. In the managers workshop they answer the same two question and fill two similar charts. The charts illustrate the employees’ and managers’ perceptions of the working conditions that create enthusiasm or cause stress and strain in the employees’ daily work. The workshop creates an opportunity for all participants to express themselves, and knowledge about work-related problems becomes explicit. The subsequent clustering of related statements express a theme on each side bone. The theme equals an initial problem identification, which during the intervention is transformed into intervention initiatives. Results In each FishBone the side bones express different themes. Typical themes that create enthusiasm in the work are “Good colleagues”, “Challenging tasks”, “Meaning in the work”, “Solving the problem”, “Making the customers/users happy”. Examples of themes related to strain in the work are “Lack of recognition from management”, “Bad planning”, “Bottleneck in the work process”, “Lack of feedback”, “Lack of cooperation”, “Badly managed meetings” and “Unclear goals”. Practical implications The upfront implications of the FishBone workshops are three-fold. First, the participants gain insight into what work-related issues create Enthusiasm and Strain. Second, the participants get an understanding of the different situations and perceptions of the work and work-related issues. Third, managers and employees gain insight into that they may not have the same understanding of what creates enthusiasm and strain at work. Forth, the researcher gain insight into the local program theories of the workplace actors, i.e. how the perceive motivators and stressors at work. From a research perspective, the FishBone workshop provides valuable insight into factors at the particular workplace that may be used to reduce the employees and manager perceive at the most salient stressors. By identifying the work related issues the workshop strengthens the link between the current situation at the work place and the intervention initiatives (organizational fit (Nielsen 2013)). Conclusion The FishBone workshop creates a collective reflective room for systematic reflection in which both managers and employees can participate to develop solutions and thus transform initial problem identification to intervention initiatives. From the identification of work-related and workplace stressors, managers and employees can then initiate changes in the organizational structure, functions, roles and tasks.
The forming of truck platoons: How to make it work

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The future flexible, decarbonised, and coherent energy markets

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The Global Goals for Sustainable Development in Engineering Education
History is full of examples of how engineers for good and bad have invented and implemented technologies, with consequence far beyond their imaginations. Think for instance on the development of the combustion engine which enabled a revolution in transport and individual mobility but at the same time contributed to CO2 emissions and thus global warming. Or digital technologies that through the internet and social media have created platforms for information sharing and identity building in a globalized world but at same time creates more polarized and post factual societies. A recent study by across 11 countries conducted among 10,341 respondents finds that engineering indeed played a vital role in creating our past and will continue to play a critical role in shaping our future. While this finding mirrors the common understanding of engineering, the study points to a need to change the role of engineering from “inspire new innovations” to “solving the world’s problems”. (QEPrize 2015) United Nations recently conceptualized crucial world’s problems in the form of Sustainable Development Goals (SDGs) as illustrated in the following figure. The SDGs are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. (United Nations 2015). Today the goals are adopted by all 193 UN member states and explicitly addressed by more than 9,000 companies in 170 countries representing nearly every sector and size (Global Compact 2017). Despite its current widespread diffusion, continues support for the SDGs through science and education is of outmost importance in the actual realization of the goals by 2030 (UN-SG-SAB 2014). This workshop targets the role of engineers as persons who solve societal challenges. It will facilitate a discussion and will share some approaches to address the following question: “How could we embed SDGs in engineering education?” We do this through a workshop facilitated as a knowledge café where the participants collectively explore how could we embed SDGs in engineering education, through several educational practices across the learning journey of engineers. A “Knowledge Café” “aims to provide an open and creative conversation on a topic of mutual interest to surface their collective knowledge, share ideas and insights, and gain a deeper understanding of the subject and the issues involved.” (Wikipedia). Participants of a ‘Knowledge Café’ rotate in small groups across different ‘stations’, in each station the group will discuss a different aspect of the problem, in our case, how to embed SDGs in engineering education. Specifically we will explore practices to connect the SDGs to core educational activities: courses, extra curriculum projects, individual major pieces of work like master and bachelor thesis, the overall learning environment of the university. Following the collective discussion and wrap of the workshop, the authors present their experiences working with SDGs in teaching project management to engineering students. Our finding is that more than 500+ students is that the SDGs represent an outstanding tool to convey the importance of engineering and to create a sense of purpose that represent a key driver for motivation. It further it enables collaboration between various disciplines and stimulates personal reflections on “what legacy do I want to leave?” and “what projects should I engage in?”

The HERA Approach To Morally Competent Robots
To address the requirement for autonomous moral decision making, we introduce a software library for modeling hybrid ethical reasoning agents (short: HERA). The goal of the HERA project is to provide theoretically well-founded and practically usable logic-based machine ethics tools for implementation in robots. The novelty is that HERA implements multiple ethical principles like utilitarianism, the principle of double effect, and a Pareto-inspired principle. These principles can be used to automatically assess moral situations represented in a format we call causal agency models. We discuss how to model moral situations using our approach, and how it can cope with uncertainty about moral values. Finally, we briefly outline the architecture of our robot IMMANUEL, which implements HERA and is able to explain ethical decisions to humans.
The Hybrid Ethical Reasoning Agent IMMANUEL
We introduce a novel software library that supports the implementation of hybrid ethical reasoning agents (HERA). The objective is to make moral principles available to robot programming. At its current stage, HERA can assess the moral permissibility of actions using the principle of double effect, and it can make utilitarian judgments. We present the prototype robot IMMANUEL based on HERA. The robot will be used to conduct research on joint moral reasoning in human-robot interaction.

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The impact of CO₂-costs on biogas usage
The Danish government has set a target of being fossil fuel independent by 2050 implying that a high degree of inflexible renewable energy will be included in the energy system; biogas can add flexibility and potentially has a negative CO₂-emission. In this paper, we investigate the socioeconomic system costs of reaching a Danish biogas target of 3.8 PJ in the energy system, and how CO₂ costs affect the system costs and biogas usage. We perform our analysis using the energy systems model Baimorel, and expand the model with a common target for raw biogas and upgraded biogas (biomethane). Raw biogas can be used directly in heat and power production, while biomethane has the same properties as natural gas. Baimorel is altered such that natural gas and biomethane can be used in the same technologies. Several CO₂-cost estimates are investigated; hereunder a high estimate for the expected CO₂-externality costs. We find that system costs increase with CO₂-costs in most cases, while the biogas target becomes socio-economically cheaper. In the case of a
very high CO₂-cost, system costs decrease and biomethane becomes the primary fuel. Furthermore, biomethane functions as regulating power and the Danish fuel consumption increases due to a higher electricity export.

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Scopus rating (2015): SJR 2.276 SNIP 2.046 CiteScore 5.03
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.647 SNIP 2.63 CiteScore 5.7
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BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.54 SNIP 2.593 CiteScore 5.02
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.998 SNIP 2.25 CiteScore 4.25
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.609 SNIP 2.043 CiteScore 4
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.814 SNIP 2.725
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.729 SNIP 2.313
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.106 SNIP 1.444
Scopus rating (2007): SJR 0.913 SNIP 1.481
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.875 SNIP 1.306
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.965 SNIP 1.203
Web of Science (2005): Indexed yes
The implications of the new sulphur limits on the European Ro-Ro sector

In an effort to reduce the environmental impacts of maritime transportation, the International Maritime Organization (IMO) designated special Sulphur Emission Control Areas (SECAs) where ships are required to use low-sulphur fuel. In January 2015, the sulphur limit within SECAs was lowered to 0.1%, which can only be achieved if vessels are using pricier ultra-low sulphur fuel, or invest in abatement technologies. The increased operating costs borne by Ro-Ro operators in SECAs due to the stricter limits can result in the shutting down of some routes and a redistribution of cargo flows with land-based alternatives. The exact repercussions of the new sulphur limits are difficult to identify in the wake of significant recent reductions of the fuel prices for both low-sulphur and heavy fuel oil. This paper presents a modal split model that estimates modal shifts vis-a-vis competing maritime and land-based modes available to shippers. This allows examining the implications of the recent low prices to modal choice, and the influence a potential increase in fuel prices may have. The model is applied to seven routes affected by the regulation based on data from a leading European Ro-Ro operator. Sensitivity analyses on market share data, cargo values, freight rates, and haulers rates are conducted. Emissions inventories are constructed to assess the environmental efficacy of the SECA regulation. The novelty of the proposed model lies in the examination of the ex-post implications of shutting down a service and the redistribution of transport. Recommendations to mitigate and reverse the negative side-effects of such environmental legislation are proposed.

General information
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Organisations: Department of Management Engineering, Management Science, Operations Management, Transport DTU
Authors: Zis, T. (Intern), Psaraftis, H. N. (Intern)
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Scopus rating (2015): SJR 1.143 SNIP 1.379 CiteScore 2.65
Robert Batterman claims that asymptotic explanations in physics are acausal, involve un-deidealizable idealizations and are counter-examples to the mapping account of the role of mathematics in physics. In this paper, I analyze and criticize aspects of this claim, especially its implications for metaphysics and to a lesser extent methodology in physics. Regarding causality, Batterman has advocated that explaining emergent physical phenomena such as the universality of critical exponents in phase transitions involve throwing away causal details, and that we should replace Kim's requirement of emergents having novel causal powers with emergents figuring in novel explanatory stories, see (Batterman, 2002). I argue that Batterman's view of causality is ontologically too restrictive. I also argue that it is methodologically too restrictive, in that abstractions in science, including some involved in examples given by Batterman, e.g. (Batterman,2002) (Batterman, 2009) almost always involve throwing away details (causal or otherwise), but that this does not imply throwing away the category itself (e.g. causality), see also (Batterman & Rice, 2014), (Lange, 2015). I further argue that even if physical explanations do not directly appeal to causal factors at the macro level, they presuppose them. For instance, the modeler's choice of which parameters (or dimensions) are essential to the explanation of a certain phenomenon and which are consequently taken as a starting point for a dimensional analysis, see (Batterman, 2002), (Barenblatt, 1979), presupposes a causal structure of the universe in terms of dependent and independent variables. Sometimes such presuppositions can be explicated as ontological assumptions built into systems of units of measurement. If no causality is presupposed, the account 2 will be subject to the same type of criticism as the deductive-nomological model, e.g. why not explain the length of strings of pendulums via an analysis of parameters connected to their periods and gravitational acceleration? I conclude that although asymptotic explanations do not directly appeal to causality, they do not exclude causality at the macro-level and there are many prima facie reasons to keep causality at this level. I defend this against
claims made about the existence of noncausal explanations in physics, e.g. by claiming that physical explanations require a global theory, see (Wayne, 2015) or that they proceed by appealing to fictional highly idealized models in physics, see (Bokulich, 2011), (Pexton, 2014), (Wayne, 2015). I claim that these arguments do not preclude that causality is presupposed at the macro-level, except perhaps in quantum theoretical explanations in which case an appeal to Bohr’s correspondence principle may be required, a mystery which will not be solved here. Going into more details with asymptotic explanations, I argue that Batterman’s argument that these are mathematical operations and not mathematical structures, see (Batterman, 2010), is not convincing, as the distinction between a mathematical operation and a structure is very hard to uphold. I also argue that his argument that they are counterexamples to the mapping account of mathematical explanations in physics is imprecise in one aspect, as an idealized misrepresentation of a phenomenon is still a representation of that phenomenon. I find at the core of Batterman’s view on asymptotic explanations an ineliminable distortion of reality, the appeal to the singularity. One central problem in that discussion is whether we should consider reality itself as distorted in the singularity, and our representation of it to be correct in some sense, or we should say that our representation of reality is distorted and important aspects of reality are unknown to us? I comment on this question. I conclude that the existence of asymptotic explanations should not influence our views of causality at the macro-level and that they are not convincing counter-examples to the mapping account of 3 mathematical explanation in physics. They do, however, point to a very central problem in the interpretation of physical terms, i.e. what actually happens in the singular limit?

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The influence of fertiliser and pesticide emissions model on life cycle assessment of agricultural products: The case of Danish and Italian barley
Barley is an ancient crop and a great source of nutrients. It is the third largest agricultural commodity produced in Denmark and represents a relevant crop in Italy too. Due to the increasing customers awareness of sustainability issues, it has become essential to evaluate the environmental impact and the use of resources in food production and distribution systems. However, especially in agriculture, difficulties are encountered when emissions from fertilisers and pesticides need to be modelled, due to a variety of modelling options and their dependency on the availability of site-specific information. How to address these difficulties might affect the results reliability. Hence, this study aims to evaluate, using the life cycle assessment (LCA) methodology, the influence of different models for estimating emissions from fertilisers and pesticides on the environmental impacts of barley cultivation in Denmark and Italy. Two models for fertilisers and pesticides emissions have been applied; these differ on the extent of data requirements and complexity of calculation algorithms, which might increase the results accuracy and robustness. The results show that the modelling options do affect the environmental impacts of barley production, in particular climate change, eutrophication categories, acidification and freshwater eco-toxicity. This study estimates that the variations for such categories range from 15% in the case of climate change to 89% in the case of marine eutrophication. These findings highlight the importance of the emission modelling options as well as the constraints of data requirements, critical aspects when a LCA study on agricultural products is carried out.

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State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Manchester , Università degli Studi di Milano
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BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.773 SNIP 1.811 CiteScore 3.7
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BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.644 SNIP 1.513
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Scopus rating (2008): SJR 1.463 SNIP 1.501
Web of Science (2008): Indexed yes
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Web of Science (2007): Indexed yes
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Scopus rating (2005): SJR 1.442 SNIP 1.508
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The Key to Successful Operational Due Diligence: The right data, at the right time, analysed in the right way

Purpose:
The purpose of this paper is to describe both qualitative and quantitative operational determinants influencing the acquisition decision in the due diligence phase of a Merger & acquisition (M&A). The operational due diligence (ODD) process is largely unexplored in extant literature and only fragmented and unexhaustive literature exist. This research focuses on developing a dynamic end-to-end framework for conducting an ODD. The framework is structured around each area of the supply chain and help practitioners obtain key insights in the acquisition target, based on a range of key questions, data points and analyses.

Methodology:
Due to the complex nature of the research objective, a qualitative approach is used to provide rich and in-depth data. The explorative approach of the study allows for thorough understanding of the research area. Therefore, the case-study approach is the most appropriate research methodology (Yin, 1989; Oakley, 1999). In-depth data from multiple cases were selected and analyzed based on interviews – and in some cases workshops - with private equity professionals (acquirer) and private equity advisors. To ensure a sufficient empirical foundation, an online survey will also be developed. The research is divided into five key phases (i) an extensive literature review of research papers and industry publications; (ii) survey design and analysis of the responses (iii) semi-structured interviews, and workshops in the case companies; (iv) structured comparison of the literature review and the empirical data; and (v) development of a novel and dynamic framework that assists the performing acquires and advisors that conducts operational due diligence.

Findings:
A first important finding from the literature review is the research gap concerning operational due diligence. In addition, a structured normative framework is lacking. Collectively the literature review and the empirical studies revealed following operational due diligence determinants assessed across all supply chain components (Recardo 2014):
- People & Organization – Capabilities and competencies, corporate culture, organizational structure and personnel infrastructure.
- Facilities - Factory, machinery, human resources, capex requirements.
- IT & System – Data, Systems, Tools and documentation
- Operating Cost & Capital – Cost and capital structure: fixed costs, variable costs and asset.
- Scalability & Risk – Capabilities, technologies and external environment.
- Improvement Potentials – Rationalization and Efficiency.
- Synergies - Facility consolidation, Overhead reduction, purchasing power, other redundancies.

Each of these areas is supported by a range of underlying data points that are utilised to conduct a sufficient analyses leading to key insights for the acquirer.

Value:
The paper contributes with empirical research within M&As and specifically ODD, which has not been well-researched. In addition, the paper provides results which can be useful for both due diligence practitioners and researchers by (i) identifying operational determinants influencing the acquisition decision in the due diligence phase, and (ii) structuring a practical end-to-end framework which incorporates all supply chain elements, ensuring a comprehensive ODD.

Practical implications:
The research is focused around industrial applicability and the proposed framework can serve as support to practitioners who perform ODD.
The landscape of existing models for high-throughput exposure assessment

Models are becoming increasingly available to model near-field fate and exposure, but not all are suited for high throughput. This presentation evaluates the available models for modeling exposure to chemicals in cosmetics, cleaning products, food contact and building materials. It assesses their applicability to quantitative high throughput exposure assessment in CAA and CRA, looking in particular at the following characteristics: validity of main assumptions; availability of analytical solutions and model parsimony; availability of methods to estimate key inputs for a large number of chemicals and ability to easily handle large datasets. For building materials a series of diffusion-based models have been developed to predict the chemicals emissions from building materials to indoor air, but existing models require complex analytical or numerical solutions, which are not suitable for LCA or HTS applications. Thus, existing model solutions needed to be simplified for application in LCA and HTS, and a parsimonious model has been developed by Huang et al. (2017) to address this need. For SVOCs, simplified solutions do exist, assuming constant SVOC concentrations in building materials and steady state in indoor air (Little et al., 2012; Liu et al., 2013), but they do not well account for SVOC sorption into indoor surfaces and absorption into human skins (Huang et al., 2017). Thus a more comprehensive simplified solution is needed for SVOCs. For personal Care Products, a mass balance model that accounts for skin permeation and volatilization as competing processes and that requires a limited number of readily available physiochemical properties would be suitable for LCA and HTS purposes. Thus, the multi-pathway exposure model for chemicals in cosmetics developed by Ernstoff et al. constitutes a suitable basis and can be refined in the future. The review will also address models available for modeling chemicals in cleaning products and other indoor used chemicals.

The Limits of Logic-Based Inherent Safety of Social Robots

Social robots can reason and act while taking into account social and cultural structures, for instance by complying with social or ethical norms or values. As social robots are likely to become more common and advanced and thus likely to interact with human beings in increasingly complex situations, ensuring safety in such situations will become very important. In this chapter, I investigate the safety of social robots, focusing on the idea that robots should be logically guaranteed to act in a certain way, here called logic-based inherent safety. A meta-logical limitation of a particular program for logic-based safety for ethical robots is shown. Afterwards, an empirical study is used to show that there is a clash between deontic reasoning and most formal deontic logics. I give an example as to how this clash can cause problems in human-robot interaction. I conclude that more formal deontic logics are needed and that logic only should play a limited part in the overall safety architecture of a social robot, which should also be based on other principles of safe design.
The liquefied natural gas infrastructure and tanker fleet sizing problem

We consider a strategic infrastructure and tanker fleet sizing problem in the liquefied natural gas business. The goal is to minimize long-term on-shore infrastructure and tanker investment cost combined with interrelated expected cost for operating the tanker fleet. A non-linear arc-based model and an exact solution method based on a set-partitioning formulation are developed. The latter approach allows very fast solution times. Computational results for a case study with a liner shipping company are presented, including an extensive sensitivity analysis to account for limited predictability of key parameter values, to analyze the solutions' robustness and to derive basic decision rules.
The Meaning of System: Towards a Complexity Orientation in Systems Thinking

This article reviews the generic meaning of 'system' and complements more conventional system notions with a system perception based on recent complexity theory. With system as the core concept of systems theory, its actual meaning is not just of theoretical interest but is highly relevant also for systems practice. It is argued that complexity theory and thinking with reference to Luhmann a.o. ought to be recognised and paid attention to by the systems community. Overall, it is found that a complexity orientation may contribute to extend and enrich the explanatory power of current systems theory when used to complex real-world problems. As regards systems practice it is found that selective use and combination of five presented research approaches (functionalist, interpretive, emancipatory, postmodern and complexity) which function as different but complementing 'epistemic lenses' in a process described as constructive circularity, may strengthen the exploration and learning efforts in systems-based intervention.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management
Authors: Leleur, S. (Intern)
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The multi-port berth allocation problem with speed optimization and emission considerations

The container shipping industry faces many interrelated challenges and opportunities, as its role in the global trading system has become increasingly important over the last decades. On the one side, collaboration between port terminals and shipping liners can lead to costs savings and help achieve a sustainable supply chain, and on the other side, the optimization of operations and sailing times leads to reductions in bunker consumption and, thus, to fuel cost and air emissions reductions. To that effect, there is an increasing need to address the integration opportunities and environmental issues related to container shipping through optimization. This paper focuses on the well known Berth Allocation Problem (BAP), an optimization problem assigning berthing times and positions to vessels in container terminals. We introduce a novel mathematical formulation that extends the classical BAP to cover multiple ports in a shipping network under the assumption of strong cooperation between shipping lines and terminals. Speed is optimized on all sailing legs between ports, demonstrating the effect of speed optimization in reducing the total time of the operation, as well as total fuel consumption and emissions. Furthermore, the model implementation shows that an accurate speed discretization can result in far better economic and environmental results.
The Nordic model*: historical origins and its significance for the work place dialogue towards increased organizational sustainability

The vision of the NOVO network is “a Nordic Model for development of more sustainable production systems in healthcare”. It is based on the assumption that the Nordic countries, through high levels of trust and justice (social capital), have unique opportunities to carry out dialogue-based change processes, cf. “the Nordic Model”. This seems important due to the frequent negative impact of rationalization on ergonomics and vice versa (see previous abstract by Winkel et al). The Nordic model has been the subject of extensive discussions and studies (e.g. Schiller et al., 1993). The Nordic exceptionalism might first be noticeable in the Middle Ages in the weak feudalism compared to the Continent. The peasants of the North were personally free and owned their land. They paid taxes and were the direct subjects of the Crown. Correspondingly, the nobility was weak. At the time of the industrial breakthrough in the 19th century, industrial workers were recruited from the landless, often sons and daughters of self-owning farmers. Before the advent of the labour movement, dialogue instead of violence was the trusted way for the popular movements to advance their cause. The international revolutionary orientation of the trade unions was already during the 1890s subordinated to negotiations with national employers. The collective agreement is the counterpart to the share contract (in Danish: “Andelskontrakt”), which created and structured social capital in the agricultural development in Denmark. The collective agreement also began its successful spread in Denmark and became dominant in the whole of the North. The class conflicts took place in countries without major ethnic, cultural and religious splits. In a European comparison class differences were relative moderate. The state had a limited record of active repression and corruption. To-day we still have the best organized trade unions in the world, close cooperation with important social democratic parties, strong employer organizations, early recognition of trade unions and established policy of collective bargaining with close to total coverage of the labour market and a principle of no-state intervention in industrial conflicts. Thus, the industrial relations in the Nordic countries still seem to be exceptional. Key research issues are now to further investigate the Nordic Model in terms of:
- critical prerequisites for a positive environment for dialogues based on workplace agreements
- how such insights can be measured and further developed
- how they can be made available to a wider audience in an applicable way
this respect (see the following abstract by Schiller et al), with a potential successful outcome in terms of macroeconomic indicators (discussed by Olesen et al., 2008). Thus, we suggest increased focus on our vision: “a Nordic Model for development of more sustainable production systems in healthcare”. Future R&D performed within the framework of our NOVO network should substantiate this hypothesis. In practical terms, this necessitates expanded research protocols.

**General information**

State: Published
Organisations: Department of Management Engineering, Implementation and Performance Management, Management Science, Norwegian University of Science and Technology, University of Gothenburg
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**The rationality of intuition: Studying adaptive heuristics in project decision-making**

This paper presents a research agenda for studying adaptive heuristics in project decision making. Project decisions are a potentially fruitful research field for adaptive heuristics. These decisions typically take place under time and information constraints, with high complexity and ambiguity - environments in which adaptive heuristics typically strive as effective decision tools. Yet, project decisions as a research topic introduce challenges that are currently not considered in the main body of adaptive heuristics research: the issue of group decision making, and the element of an unpredictable future that is shaped by the project as it is carried out. The proposed research agenda highlights potential research problems within a descriptive and a prescriptive stream of the research. Furthermore, the article presents conventional methodologies to study adaptive heuristics, discusses the limitations of these methods for project decision-making, and suggests alternative methodologies, suitable to cope with group decision-making and irreducible uncertainty.

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State: Published
Organisations: Department of Management Engineering, Engineering Systems
Authors: Stingl, V. (Intern), Geraldi, J. (Intern)
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Main Research Area: Technical/natural sciences
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**The real governance of disaster risk management in peri-urban Senegal: Delivering flood response services through co-production**

Disastrous and recurring floods have impacted West African urban centres over the last decade, accentuating already existing vulnerabilities in poor neighbourhoods. Climate change-induced changing weather patterns and more extreme weather events are only part of the explanation for this situation, as large segments of the urban population in West Africa are not offered the public services, infrastructure and protective regulations needed in order to respond to floods. Through an empirically grounded approach, the article shows that the ability to respond to floods is formed largely outside the realm of the state in a poor peri-urban municipality of Pikine, Dakar. The authors show how the organization of collective services pertaining to flood response and climate change adaptation is maintained through co-production among service users and providers entailing a mixture of diverse governance modes. The article concludes that weak state capacity is not equivalent to non-existent of ungoverned collective services linked to floods. While flood response service delivery through co-production, may constitute the best available options in a context of poor resources, because of the negotiated character of public service delivery it also creates an environment favourable for brokers to take ownership of central processes of service delivery and for structural inequalities to be reinforced locally.

**General information**

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The Recharging Infrastructure Needs for Long Distance Travel by Electric Vehicles: A Comparison of Battery-Switching and Quick-Charging Stations

On-road electric vehicle recharging infrastructure is essential in the transformation of electric vehicles into a practical transportation option. This study focuses upon assessing the need for recharging infrastructure for long distance travel for a large market share of electric vehicles, finding the optimal infrastructure deployment, and understanding the economic, social and environmental costs and benefits associated with the optimal infrastructure deployment. The analysis considers quick-charging and battery-switching as plausible recharging technologies. Results show: (i) the promotion of electric vehicles is beneficial when considering economic costs and benefits for operators and users, tax redistribution, and environmental externalities, even with a relatively modest market share; (ii) the number of required recharging stations for satisfaction of the travel demand is at the magnitude of 1–2% of the current gasoline infrastructure, under the assumption...
of wide availability of off-road recharging at home and the workplace; (iii) the optimal deployment of the recharging stations is along the main national highways outside of urban conurbations, under the assumption of wide availability of home recharging; (iv) the battery-switching technology is far more attractive to the consumer than the quick-charging technology for long-distance travel requiring more than one recharging visit.

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**The restricted stochastic user equilibrium with threshold model: Large-scale application and parameter testing**
This paper presents the application and calibration of the recently proposed Restricted Stochastic User Equilibrium with Threshold model (RSUET) to a large-scale case-study. The RSUET model avoids the limitations of the well-known Stochastic User Equilibrium model (SUE) and the Deterministic User Equilibrium model (DUE), by combining the strengths of the Boundedly Rational User Equilibrium model and the Restricted Stochastic User Equilibrium model (RSUE). Thereby, the RSUET model reaches an equilibrated solution in which the flow is distributed according to Random Utility Theory among a consistently equilibrated set of paths which all are within a threshold relative to the cost on the cheapest path and which do not leave any attractive paths unused. Several variants of a generic RSUET solution algorithm are tested and calibrated on a large-scale case network with 18,708 arcs and about 20 million OD-pairs, and comparisons are performed with respect to a previously proposed RSUE model as well as an existing link-based mixed Multinomial Probit (MNP) SUE model. The results show that the RSUET has very attractive computation times for large-scale applications and demonstrate that the threshold addition to the RSUE model improves the behavioural realism, especially for high congestion cases. Also, fast and well-behaved convergence to equilibrated solutions among non-universal choice sets is observed across different congestion levels, choice model scale parameters, and algorithm step sizes. Clearly, the results highlight that the RSUET outperforms the MNP SUE in terms of convergence, calculation time and behavioural realism. The choice set composition is validated by using 16,618 observed route choices collected by GPS devices in the same network and observing their reproduction within the equilibrated choice sets generated by the RSUET model. Relevantly, the RSUET model is very successful in reproducing observed link.

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Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Leeds, University of Queensland
Authors: Rasmussen, T. K. (Intern), Nielsen, O. A. (Intern), Watling, D. P. (Ekstern), Prato, C. G. (Ekstern)
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The role of information systems in non-routine transit use of university students: Evidence from Brazil and Denmark

In this study we seek to understand the relation between travel information, transit use intentions and night travel. We hypothesize that transit use is related to the perceived usefulness and the ease-of-use of the system, which are related to information quality and real-time information availability. The hypothesized relations are anchored theoretically in the Technology Acceptance Model and validated empirically in two case-studies: (i) Copenhagen (Denmark), characterized by a highly integrated transit system with an advanced web-based information system; (ii) Recife and Natal (Brazil), characterized by a lower perceived level-of-service and non-integrated information sources. Data from a tailor-made survey of 1123 university students were collected. Structural equation models were employed for explaining the use of transit as a function of the observed respondent characteristics and the latent constructs. The results show that: (i) information search quality and source explain transit use; (ii) information quality underlies level-of-service and familiarity; (iii) the use of real-time information links to information quality and familiarity; (iv) general transit use and non-routine use during night and to unfamiliar places are correlated; and (v) the behavioral framework is confirmed with the two case-studies. (C) 2016 Elsevier Ltd. All rights reserved.
The role of logbooks as mediators of engineering design work

Information transformation is key to engineering design work. However, research on how information management tools, and logbooks in particular, mediate this, is fragmented. We explore this via two studies (from which we confirm the central role of logbooks) and propose three modes of mediation: facilitating cognition and creation, gathering and collation of information, and staging and transformation of information. The findings explain the widespread use of logbooks through
their support of these three modes. Consequently, we contend that multi-modal mediation is one of the main reasons why logbooks are such a central and enduring medium. This synthesises and extends theory on mediation and information use in engineering design. Further, practical insights are derived for the development new information management tools.

General information
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Organisations: Department of Management Engineering, Technology and Innovation Management, University of Bristol
Authors: McAlpine, H. (Ekstern), Cash, P. (Intern), Hicks, B. (Ekstern)
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Scopus rating (2014): SJR 1.283 SNIP 2.752 CiteScore 2.78
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Scopus rating (2013): SJR 1.36 SNIP 2.39 CiteScore 2.89
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ISI indexed (2012): ISI indexed yes
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BFI (2011): BFI-level 2
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Scopus rating (2010): SJR 0.825 SNIP 2.432
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
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BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.692 SNIP 1.818
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.163 SNIP 2.175
Scopus rating (2006): SJR 0.703 SNIP 2.58
Scopus rating (2005): SJR 0.409 SNIP 1.33
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.74 SNIP 2.334
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.241 SNIP 1.817
Scopus rating (2002): SJR 0.586 SNIP 1.344
The role of managers in organizational interventions and non-interventions – at intra and inter-organizational work places

Over the years, workplaces and employees have become more dispersed due to organizational changes in large traditional organizations and the development of new business opportunities across the world, such as shifts from production to service- or knowledge-based work environment (Hinds & Kiesler, 2002). As companies move toward globalization companies use distance work (Fisher & Fisher, 2001) to accomplish work more effectively and efficiently. Distance work and management occur at different locations, such as from home (telework), in satellite offices (intraorganizational work), or at the customers’ or clients’ locations (inter-organizational work) (Cropper, Huxham, Ebers, & Ring, 2008; Verburg, Bosch-Sijtsema, & Vartiainen, 2013). According to Fisher and Fisher (2001), time, space, and/or culture constitute the distance between managers and employees. In a systematic review, Crawford et al. (2011) found that only a few studies have investigated the wellbeing of employees who work at clients’ or customers’ offices (inter-organizational work) over a long period of time and how to best manage these employees. In inter-organizations, distance employees are employed by one company (the provider) but work at a different company (the customer) (Cropper et al., 2008; Hinds & Kiesler, 2002); here, the customer’s working conditions influence the employees. Taken together, studies of distance management and managers employ a performance perspective on leadership, while studies of the link between distance management and employees’ wellbeing are rare—knowledge about distance work and employees’ wellbeing is altogether missing (Crawford et al., 2011). Occupational-level occupational health interventions is the recommended psycho-social risk management approach for improving health and well-being at work (EU-OSHA, 2016). It has therefore been suggested that we need to incorporate elements of the implementation process and context into these evaluations, to better understand the mechanisms producing the outcomes (Karina Nielsen & Randall, 2012). Occupational health intervention literature has consistently suggested line managers’ supportive behaviour as an important implementation factor that influence how the intervention unfolds (K. Nielsen, 2013). The need for new knowledge about the influence of line managers’ implementation-supportive behavior on intervention for health management at work, but also about the role of OHS practitioners and applicable management tools, forms the basis for this symposium. Hence, three studies are presented. Overall the studies look at the role of leaders in interventions and non-interventions to ensure employee wellbeing and/or geography) between the managers and the employees and type of organization (intra and inter). The main objective of the symposium is thus to create an awareness of the role that managers have in both organizational interventions and non-interventions and how distance has an impact on their behavior. More specifically, this symposium highlights the role of leaders’ behavior in interventions at three different types of work sites and presents new finding about best practices. This symposium is one of several symposia submitted by the “International Network for Sustainable Organizational Interventions (INSOI)” and consists of three contributions: The first presentation, presents a longitudinal intervention process study that has examined the influence of line managers’ implementation-supportive behavior on initial use and sustained use of a web-based intervention for health management at work. The scope for the study is the line managers and their work group, i.e. intraorganizational work. In the second presentation, the authors present a three-level crosssectional study of Occupational Health and Safety (OHS) practitioners, line managers and their employees working in intra-organizational distance work and how they can influence the OHS of the distance workers. The managers and employees work within the same company but are dispersed as they work at different locations. The third presentation presents a qualitative study of managers’ roles in interorganizational distance work and which tools they apply to create a sense of proximity to ensure both organizational performance and employee well-being across distances, both time and geography. The scope for this study is distance work where the employees are employed in one company but work for a longer period in a different company under their working conditions.

General information
State: Published
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Event: Abstract from Work, Stress and Health 2017, Minneapolis, United States.
Main Research Area: Technical/natural sciences
The role of natural resources in path development. The case of the bioeconomy

The last decade has witnessed a radical increase in attention to the bioeconomy, both in terms of academic research (Bugge, Hansen, & Klitkou, 2016) and policymaking (Richardson, 2012). Arguments in favour of a bioeconomy are often related to assumed positive effects in terms of addressing multiple grand challenges (Coenen, Hansen, & Rekers, 2015), in particular climate change, health and energy security (Ollikainen, 2014; Pütlz, Kleinschmit, & Arts, 2014). However, opportunities for economic development associated with the transition to a bioeconomy are also repeatedly emphasised (Bugge et al., 2016; Pollack, 2012; Staffas, Gustavsson, & McCormick, 2013). Arguably, the bioeconomy necessitates and opens new opportunities for industrial development and restructuring, yet, a deeper understanding of these processes in the bioeconomy context is currently lacking. A central analytical perspective in economic geography to understand such industrial development processes is the concepts of path creation and path renewal. Insights from evolutionary economic geography have in particular highlighted that new industrial paths are likely to appear through a branching process where existing technological specialisations in regions condition future industrial diversification (Boschma & Frenken, 2012; Neffke, Henning, & Boschma, 2011). The underlying explanation is that localised knowledge spills over between technologically related fields and, thus, leads to new industry formation. While it is generally accepted in the literature that such regionally contained knowledge spillovers are important for path development processes, critiques have recently been raised concerning the lack of attention towards other potentially important factors. Thus, in addition to the existence of relevant knowledge, certain regions may also provide particularly fertile market conditions (Tanner, 2014) or support for new industries through the actions of public and quasi-public organisations (Dawley, 2014; Fornahl, Hassink, Klaerding, Mossig, & Schröder, 2012). Drawing on insights from the technological innovation systems literature, Binz, Truffer, and Coenen (2016) have suggested that path development processes are conditioned by the availability of four types of resources: knowledge, markets, finance and legitimacy. In the current paper, we seek to extend this line of reasoning in two ways. Firstly, we argue that the Binz et al. (2016) framework is insufficient for understanding path development processes in the bioeconomy because it ignores the role of natural resources. In general, evolutionary economic geography has paid little attention to the importance of natural resources. However, their availability may significantly influence path development processes in the bioeconomy as well as in other natural resource intensive industries. Secondly, we point to the inter-relation between the different forms of resources that condition path development processes, by outlining how natural resource availability influences the accessibility to other resources needed for bioeconomy path renewal. Empirically, we analyse path development in the forest industry in the South of Norway by examining on the process of turning a former pulp and paper mill near the city of Hønefoss into a production facility for multiple new wood-based products (i.e. a so-called biorefinery, see Bauer, Coenen, McCormick, & Voytenko, 2016; Hansen & Coenen, 2016; OECD, 2009). The analysis is centred on a subsidiary, Treklyngen, of a large forest owner association, Viken Skog. The subsidiary was established in 2012 with the main goal of ensuring the establishment of new wood-based manufacturing at the site of the former pulp and paper mill. We used semi-structured interviews with central actors (Treklyngen, industry projects, politicians and stakeholder organisations), site visit, document analysis and media analysis as empirical data sources for conducting an event history analysis. Of central importance are events, which support or prevent access to resources (knowledge, markets, finance, legitimacy and natural resources). We also note contextual events of importance in the political, economic and technological spheres. Thus, a database of events have been constructed, which documents the development of the Treklyngen case from the origin in 2012 to the end of 2016. Preliminary findings are that the availability of natural resources was central to the path development process. As the traditional market for pulp and paper diminished, forest owners had to find new possibilities for value creation related to residues and pulp wood.

General information
State: Published
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Thesis: Absolute Sustainability from a Circular Architectural Perspective

General information
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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Technical University of Denmark
Authors: Frankvard, K. L. (Ekstern), Nyholm, A. C. (Ekstern), Birkved, M. (Intern)
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The true cost of using traditional fuels in a humanitarian setting. Case study of the Nyarugusu refugee camp, Kigoma region, Tanzania
Over the past two decades, the global number of forcibly displaced people has doubled, reaching 65.6 million in 2017. Reducing energy poverty has been identified as a priority on the international agenda since September 2015, when the UN adopted seventeen Sustainable Development Goals including Goal 7 which seeks to ‘ensure access to affordable, reliable, sustainable and modern energy for all by 2030’. However, recent research sheds light on the magnitude of energy poverty in humanitarian settings. In Sub-Saharan Africa, as much as 85% of the refugee population living in camps lack access to enough energy to cover their basic needs for cooking, heating and lighting. The inefficient use of energy by displaced people emitted 14.3 million tonnes of Carbon Dioxide (tCO2) in 2014, globally. The topic of humanitarian energy entails three aspects: the energy services (e.g. lighting, cooking or heating), the sources (solar, LPG, kerosene) and the products (solar panels, cookstoves, electricity grids) (RSC, 2017) (Gunning, 2014). Within this field, the provision of energy for cooking is a crucial dimension for many reasons. Firstly, because the food distributed by the World Food Program needs to be cooked, access to fuel underpins food security. Secondly, as many as 3.9 million people die every year from respiratory diseases associated with Household Air Pollution from cooking with solid fuels (Smith, 2014), which makes it the second most important environmental health risk factor after childhood malnourishment in Sub-Saharan Africa in terms of years due to ill-heath (DALY) (Lim et al., 2012). This recognition even led to the creation of the UN-funded Global Alliance for Clean Cookstoves (GACC) in 2010. Finally, the encampment policy in Tanzania inevitably constrains firewood collection to small geographical areas, which often generates competition for resources and conflicts with the local communities.

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Organisations: Department of Management Engineering, UNEP DTU Partnership
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The use of electric vehicles: A case study on adding an electric car to a household
The market share of battery electric vehicles (EVs) is expected to increase in the near future, but so far little is known about the actual usage of this emergent technology. Consumer preference studies have indicated that the current limitation on driving distance is important. At the same time studies on the actual use of household vehicles indicate
modest requirements for daily travel. An unresolved issue is to what extent these range limitations affect daily travel in EVs. In this study, we use real electric vehicle trip data to study the distribution of daily use and types of home-based journeys where a household decides to use an electric vehicle instead of their conventional vehicle. The results show how several factors related to distance and number of necessary charging events have plausible effects on electric vehicle travel behaviour. Further, the modelling indicates that the EV alternative is mostly used for well-planned transport and that EV use will not be the same as use of the conventional vehicle in two-vehicle households.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, Technical University of Denmark
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Web of Science (2015): Indexed yes
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Scopus rating (2014): SJR 2.25 SNIP 2.597 CiteScore 3.49
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Scopus rating (2013): SJR 2.355 SNIP 2.824 CiteScore 3.46
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BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.42 SNIP 2.652 CiteScore 3
ISI indexed (2012): ISI indexed yes
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BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.87 SNIP 2.538 CiteScore 2.61
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.648 SNIP 2.202
BFI (2009): BFI-level 2
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Scopus rating (2008): SJR 2.325 SNIP 2.435
Scopus rating (2007): SJR 1.573 SNIP 2.165
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 2.39 SNIP 2.895
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Scopus rating (2005): SJR 0.869 SNIP 1.716
Threshold-based Stochastic User Equilibrium models

General information
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Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Leeds
Authors: Watling, D. P. (Ekstern), Rasmussen, T. K. (Intern), Nielsen, O. A. (Intern), Prato, C. G. (Ekstern)
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Event: Abstract from INFORMS Transportation and Logistics Society 2017, Chicago, United States.
Main Research Area: Technical/natural sciences
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Tilpasser ældre deres kørsel, når de har kognitive svækkelser?
At køre bil er en krævende opgave, og kognitive svækkelser kan derfor gøre det vanskeligt at køre trafiksikkert. En ny australisk undersøgelse tyder på, at ældre i nogen grad kompenserer for aldersrelaterede kognitive svækkelser uden selv at være opmærksom på, at de gør det. Undersøgelsen viser endvidere, at personer, der regelmæssigt kører med de ældre som passagerer, kan bidrage med vigtig information om, hvilke udfordringer de ældre bilister har, og hvordan de håndterer dem.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
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Publication date: 2017

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http://www.trafiksikkerhedsforskning.dtu.dk/Arkiv/Nr-37/Selvregulering-blandt-aeldre
Publication: Communication › Newspaper article – Annual report year: 2017

Time constrained liner shipping network design
We present a mathematical model and a solution method for the liner shipping network design problem. The model takes into account coordination between vessels and transit time restrictions on the cargo flow. The solution method is an improvement heuristic, where an integer program is solved iteratively to perform moves in a large neighborhood search. Our improvement heuristic is applicable as a real-time decision support tool for a liner shipping company. It can be used to find improvements to the network when evaluating changes in operating conditions or testing different scenarios. Computational results on the benchmark suite LINER-LIB are reported. (C) 2016 Elsevier Ltd. All rights reserved.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Transport DTU, Operations Research, Ecole Polytechnique de Montreal
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Main Research Area: Technical/natural sciences
Tolerance analysis for 0–1 knapsack problems

Post-optimal analysis is the task of understanding the behavior of the solution of a problem due to changes in the data. Frequently, post-optimal analysis is as important as obtaining the optimal solution itself. Post-optimal analysis for linear programming problems is well established and widely used. However, for integer programming problems the task is much more computationally demanding, and various approaches based on branch-and-bound or cutting planes have been presented. In the present paper, we study how much coefficients in the original problem can vary without changing the optimal solution vector, the so-called tolerance analysis. We show how to perform exact tolerance analysis for the 0–1 knapsack problem with integer coefficients in amortized time $O(c \log n)$ for each item, where $n$ is the number of items, and $c$ is the capacity of the knapsack. Amortized running times report the time used for each item, when calculating tolerance limits of all items. Exact tolerance limits are the widest possible intervals, while approximate tolerance limits may be suboptimal. We show how various upper bounds can be used to determine approximate tolerance limits in time $O(\log n)$ or $O(1)$ per item using the Dantzig bound and Dembo–Hammer bound, respectively. The running times and quality of the tolerance limits of all exact and approximate algorithms are experimentally compared, showing that all tolerance limits can be found in less than a second. The approximate bounds are of good quality for large-sized instances, while it is worth using the exact approach for smaller instances.
Toolbox for uncertainty; Introduction of adaptive heuristics as strategies for project decision making

This article presents adaptive heuristics as an alternative approach to navigate uncertainty in project decision-making. Adaptive heuristic are a class of simple decision strategies that have received only scant attention in project studies. Yet, they can strive in contexts of high uncertainty and limited information, which are the typical project decision context. This article develops a conceptual model that supports a systematic connection between adaptive heuristics and project decisions. Individual adaptive heuristics succeed only in specific decision environments, in which they are 'ecologically rational'. The model builds on the individual definitions of ecological rationality and organizes them according to two types of uncertainty ('knowable' and 'unknowable'). Decision problems and heuristics are furthermore grouped by decision task (choice and judgement). The article discusses several resulting propositions for future research and analyses the scant project literature on heuristics with regard to its fit to the model and the propositions. This conceptual approach supports future prescriptive research that can foster the development of efficient and intuitively applicable decision support tools. It finally highlights current boundaries of research on adaptive heuristics regarding the missing reflection of different types of uncertainty.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems
Authors: Stingl, V. (Intern), Geraldi, J. (Intern)
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Toward meaningful evaluation of climate change impacts in sustainability assessment of bioplastics

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Fabbri, S. (Intern), Owsianiak, M. (Intern), Hauschild, M. Z. (Intern)
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Toward more sustainable biochemicals – Applying techno-economic and life-cycle assessments to target substances

General information
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Organisations: Novo Nordisk Foundation Center for Biosustainability, Research Groups, Quantitative Sustainability Assessment, Global Econometric Modeling, Department of Management Engineering
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Number of pages: 1
Publication date: 2017
Main Research Area: Technical/natural sciences
Electronic versions:
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Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2018

Towards a Life Cycle Based Chemical Alternative Assessment (LCAA)

There is a need for an operational quantitative screening-level assessment of alternatives, that is life-cycle based and able to serve both Life cycle Assessment (LCA and chemical alternatives assessment (CAA). This presentation therefore aims to develop and illustrate a new approach called "Life Cycle Based Chemical Alternative Assessment (LCAA)" that will quantify exposure and life cycle impacts consistently and efficiently over the main life cycle stages. The new LCAA approach is illustrated though a proof-of-concept case study of alternative plasticizers in vinyl flooring. The proposed LCAA approach combines the following elements: a) The manufacturing phase chemical inventory is based on the environmental genome of industrial products database, ensuring mass and energy balance, b) near-field exposure to consumer products during the use phase is determined based on the mass of chemical ingredient in the product, first-order inter-compartmental transfer fractions and a matrix approach to determine Product Intake Fractions, and c) toxicity-related outcomes are compared with other life cycle impacts to evaluate the relevance of different impact categories for different consumer product classes. The retained case study is a comparison of two alternative plasticizers (DEHP-diethylhexyl phthalate vs. DIHP-Diisoheptyl phthalate) in vinyl flooring. First order release rates of DEHP and DIHP from flooring material to indoor air are restricted, with over the first three years a maximum of 0.4% of the SVOC initial content in flooring emitted for DEHP and 1.9% for DIHP. For climate change, there is little difference between the two plasticizers, whereas compared to DEHP, DIHP impacts are reduced by a factor 10 for human health and a factor 3 for ecotoxicity. This proof of concept case study demonstrates the feasibility of combining chemical specific Life Cycle Inventory from manufacturing database with near-field exposure assessment during product use and to compare the interest of various chemical alternatives. Considering consumer exposure during use phase is essential for both LCA and ACC, the determination of Product Intake Fractions using first order transfer matrices enabling a parsimonious exposure assessment.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Michigan, Wichita State University
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Publication date: 2017

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Towards harmonizing natural resources as an area of protection in life cycle impact assessment

In this paper, we summarize the discussion and present the findings of an expert group effort under the umbrella of the United Nations Environment Programme (UNEP)/Society of Environmental Toxicology and Chemistry (SETAC) Life Cycle Initiative proposing natural resources as an Area of Protection (AoP) in Life Cycle Impact Assessment (LCIA).

As a first step, natural resources have been defined for the LCA context with reference to the overall UNEP/SETAC Life Cycle Impact Assessment (LCIA) framework. Second, existing LCIA methods have been reviewed and discussed. The reviewed methods have been evaluated according to the considered type of natural resources and their underlying principles followed (use-to-availability ratios, backup technology approaches, or thermodynamic accounting methods).

There is currently no single LCIA method available that addresses impacts for all natural resource categories, nor do existing methods and models addressing different natural resource categories do so in a consistent way across categories. Exceptions are exergy and solar energy-related methods, which cover the widest range of resource categories. However, these methods do not link exergy consumption to changes in availability or provisioning capacity of a specific natural resource (e.g., mineral, water, land etc.). So far, there is no agreement in the scientific community on the most relevant type of future resource indicators (depletion, increased energy use or cost due to resource extraction, etc.).

To address this challenge, a framework based on the concept of stock/fund/flow resources is proposed to identify, across natural resource categories, whether depletion/dissipation (of stocks and funds) or competition (for flows) is the main relevant aspect.

An LCIA method—or a set of methods—that consistently address all natural resource categories is needed in order to avoid burden shifting from the impact associated with one resource to the impact associated with another resource. This paper is an important basis for a step forward in the direction of consistently integrating the various natural resources as an Area of Protection into LCA.
Towards Signalling Maintenance Scheduling for European Railway Traffic Management System

The European Railway Traffic Management System (ERTMS) is the newest signalling standard that has been introduced in the railway industry. The aim of ERTMS is to ensure better signalling communication amongst various train systems, and hence, to help in attaining improved connectivity and commuting between European countries.

In various countries across the world, there is a gradual shift from the current signalling systems to ERTMS. Amongst the European countries, Denmark was the first country to commence a full upgrading of its signalling system to ERTMS. A variety of maintenance requirements arise when entirely different hardware is used in the new system, which is essentially new on-board signalling equipment. In addition, to achieve a rapid response in the event of breakdowns or failures, the new recovery systems define very stringent time restrictions, in contrast to the current signalling system. Therefore, the entire maintenance system needs to change from the previous system to the newest system, and hence, new optimisation techniques need to be established so as to facilitate managers in creating ideal maintenance strategies.

The aim of this thesis is to develop new maintenance plans for the Danish Railway system, which are useful for the current signalling system based on colour-light signalling and also useful for changing to ERTMS. Considering the maintenance structure of Denmark, which is a decentralised structure, this thesis first presents a pre-phase to the scheduling phase, which is a partitioning approach for carrying out region splitting. This technique was developed due to an industrial need to categorise the maintenance region based on the tasks and the crew locations.

General information
State: Published
Organisations: Department of Management Engineering
Toward Technology-Sensitive Catching-Up Policies: Insights from Renewable Energy in China

The voluminous literature on industrial catching-up in Southeast Asian countries has regularly argued that successful catching-up largely depended on a committed state, which orchestrated industry development with a relatively uniform set of policies, including R&D support, subsidies, trade restrictions, and local content requirements. In contrast, recent contributions from the technology lifecycle literature have argued that policies should be tailored to differing technological characteristics in industries for mass-produced standardized goods, complex engineered products, and—as we argue—complex product systems (CoPS). In this paper, we extend this argument by introducing a set of separate policy mixes for each industry type, which appears most capable of providing the key resources required for catching-up: knowledge, market access, financial investment and technology legitimacy. This framework is used to analyze catching-up patterns in China's wind, solar PV, and biomass power plant industries, drawing mainly on policy documents and 106 interviews with key industry actors. We find that traditional top-down catching-up policies played a decisive role in the development of China's wind industry, but were of limited importance in the early solar PV industry, and resulted only in a limited period of rapid growth in the biomass power plant industry. The relative progress achieved in these three industries is not related to top-down policy guidance alone, but also to private sector initiative, international interdependencies, and flexibility in adapting policy mixes to each industry's technological characteristics. These results suggest that policy makers in newly industrializing countries (NICs) should avoid drafting generic sector plans, but should tailor plans to individual industries, and respond to changing policy support needs as technological capacities and global competitiveness develop.
Toward universal electrification in Ghana

In 1989, the government of Ghana set in motion an electrification plan that aims to provide universal access to electricity within a 30-year period, from 1990 to 2020. About 25 years down the line, Ghana seems to be inching closer toward universal electrification. However, a number of challenges remain. As is the case in many other countries, urban communities have greater access to the national electricity grid than rural communities. Also, electricity generation in the country has not matched demand. This has resulted in load shedding/power rationing that has become the bane of the power sector in Ghana, negatively impacting all sectors of the economy and leading to economic losses. The low generation capacity is partly due to poor fuel supply to existing thermal power plants, meaning that installed capacity is often not available for use. This is coupled with low investment in transmission and distribution systems’ infrastructure. Going forward, the government of Ghana would have to explore alternative ways of obtaining fuel, such as regasification, to solve the chronic issue of poor fuel supply for electricity generation. Distributed generation systems, using community mini-grid and off-grid systems are other alternatives that could be explored within the framework of the access agenda in order to reach the unserved poor located in remote rural communities.
Tracing Knowledge Transfer from Universities to Industry: A Text Mining Approach

This paper identifies transferred knowledge between universities and the industry by proposing the use of a computational linguistic method. Current research on university-industry knowledge exchange relies often on formal databases and indicators such as patents, collaborative publications and license agreements, to assess the contribution to the socioeconomic surrounding of universities. We, on the other hand, use the texts from university abstracts to identify university knowledge and compare them with texts from firm webpages. We use these text data to identify common key words and thereby identify overlapping contents among the texts. As method we use a well-established word ranking method from the field of information retrieval term frequency–inverse document frequency (TFIDF) to identify commonalities between texts from university. In examining the outcomes of the TFIDF statistic we find that several websites contain very related and partly even traceable content from the university. The results show that university research is represented in the websites of industrial partners. We propose further improvements to enhance the results and potential areas for future implementation. This paper is the first step to enable the identification of common knowledge and knowledge transfer via text mining to increase its measurability.
Tramp ship routing and scheduling with voyage separation requirements

In this paper we explore tramp ship routing and scheduling. Tramp ships operate much like taxies following the available demand. Tramp operators can determine some of their demand in advance by entering into long-term contracts and then try to maximise profits from optional voyages found in the spot market. Routing and scheduling a tramp fleet to best utilise fleet capacity according to current demand is therefore an ongoing and complicated problem. Here we add further complexity to the routing and scheduling problem by incorporating voyage separation requirements that enforce a minimum time spread between some voyages. The incorporation of these separation requirements helps balance the conflicting objectives of maximising profit for the tramp operator and minimising inventory costs for the charterer, since these costs increase if similar voyages are not performed with some separation in time. We have developed a new and exact branch-and-price procedure for this problem. We use a dynamic programming algorithm to generate columns and describe a time window branching scheme used to enforce the voyage separation requirements which we relax in the master problem. Computational results show that our algorithm in general finds optimal solutions very quickly and performs much faster compared to an earlier a priori path generation method. Finally, we compare our method to an earlier adaptive large neighbourhood search heuristic and find that on similar-sized instances our approach generally uses less time to find the optimal solution than the adaptive large neighbourhood search method uses to find a heuristic solution.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Research, Transport DTU
Authors: Vilhelmsen, C. (Intern), Lusby, R. M. (Intern), Larsen, J. (Intern)
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.23 SJR 1.539 SNIP 1.645
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.478 SNIP 1.364 CiteScore 1.92
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.443 SNIP 1.483 CiteScore 1.72
BFI (2013): BFI-level 1
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ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.808 SNIP 1.448 CiteScore 1.91
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.519 SNIP 2.222 CiteScore 2.49
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.074 SNIP 1.685
Transferring Knowledge from Building Operation to Design: A literature review

As a solution to the previously identified gap between expected and actual building performance, this paper investigates how knowledge can be transferred from operation to design. This is assumed to help bridge the gap and increase the performance of new built facilities. By conducting a systematic literature review, it is found, that the theoretical approach in the reviewed articles has a significant impact on the level of how applicable the recommendations are in practice. Furthermore, a list of identified tools to enable knowledge transfer is provided, including POE, PPP and building commissioning. Knowing that the list lacks inputs from cultural and organizational theory, the paper suggests that further research should focus on taking these suggestions to an operational level for the benefit of FM, building clients and design teams. Furthermore, it is found that major concepts that could be considered helpful to secure operational knowledge in design, such as Soft Landings and certification schemes like DGNB, are almost absent in the selected literature. This indicates that they are not recognized, and therefore not researched, as methods for knowledge transfer. Several countries, such as US, UK, Denmark, Saudi Arabia, and Malaysia are represented in the review.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Management Science, Implementation and Performance Management
Authors: Rasmussen, H. L. (Intern), Jensen, P. A. (Intern), Gregg, J. S. (Intern)
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Main Research Area: Technical/natural sciences
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Source-ID: 136920510
Publication: Research - peer-review › Paper – Annual report year: 2017
Transformation of India's transport sector under Global Warming of 2oC and 1.5oC Scenario

The Paris agreement stresses on concerted efforts to limit global temperature increase to 2°C and make efforts towards achieving 1.5°C temperature stabilization. Countries announced actions under the Nationally Determined Contributions outlining domestic mitigation actions to achieve the global target. Understanding the impact of these actions on achieving these ambitions requires an assessment of long term national level scenarios. Limited studies currently exist that model long term scenarios at national level addressing the impacts of Nationally Determined Contributions and the additional actions required, especially at the sectoral level. The paper compares four alternate future scenarios for India spanning till 2050, with a specific focus on the passenger and freight transportation. The analysis is performed using the ANSWER MARKAL model and complemented with methodologies to estimate transportation demand under strong decarbonisation pathways. The results show that 1.5°C scenario would need immediate actions and deep transformations. Demand side actions would, in addition to infrastructure investments require transforming human behaviour through use of information technology, internet and sharing economy. Clean vehicle technologies need to play a much bigger role and fossil fuel dependence would be moderated with the dominance of electricity, hydrogen and biofuels. The higher share of electricity in transport is complimented with accelerated decarbonisation of electricity. This transformation required for 1.5°C scenario calls for innovations that would be driven through national and sectoral policies and explicit carbon prices.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, UNEP DTU Partnership, Indian Institute of Management Ahmedabad
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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.83 SJR 1.615 SNIP 2.382
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.609 SNIP 2.383 CiteScore 5.57
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
Web of Science (2014): Indexed yes
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Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.706 SNIP 2.328 CiteScore 4.07
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BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.461 SNIP 1.825 CiteScore 3.19
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.419 SNIP 1.742
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Transport project evaluation: feasibility risk assessment and scenario forecasting

This paper presents a new approach to transport project assessment in terms of feasibility risk assessment and reference class forecasting. Conventionally, transport project assessment is based upon a Cost-Benefit Analysis (CBA) where evaluation criteria such as Benefit Cost Ratios (BCR) are obtained. Recent research has however proved that substantial inaccuracies are present when obtaining the monetary input to the CBA, particularly as concerns the construction costs and demand forecasts. This paper proposes a new approach in order to address these inaccuracies in a so-called Reference Scenario Forecasting (RSF) frame. The RSF is anchored in the cost-benefit analysis; thus, it provides decision-makers with a quantitative mean of assessing the transport infrastructure project. First, the RSF method introduces uncertainties within the CBA by applying Optimism Bias uplifts on the preliminary construction cost estimates. Hereafter, a quantitative risk analysis is provided making use of Monte Carlo simulation. This approach facilitates random input parameters based upon reference class forecasting, hence, a parameter data fit has been performed in order to obtain validated probability distribution functions. The latter have been placed and ultimately simulated on the inaccuracies of determining demand forecasts, i.e. leading to travel time savings and ticket revenues of the project. Finally, RSF makes use of scenario forecasting where trend scenarios such as economic growth and level of cross-border integration are investigated. The latter is highly relevant as RSF is demonstrated by a case example concerning the fixed link between Elsinore in Denmark and Helsingborg in Sweden.

General information
State: Published
Organisations: Department of Transport, Transport policy and behaviour, Department of Management Engineering, Management Science
Authors: Salling, K. B. (Intern), Leleur, S. (Intern)
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Web of Science (2017): Indexed Yes
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Transportvaneundersøgelsen, Variabeldeklaration datasæt TU0616v1

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Organisations: Department of Management Engineering, Transport DTU
Authors: Christiansen, H. (Intern)
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Source-ID: 130085251
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Creating fault tolerant and efficient process workflows poses a significant challenge. Individual faults, defined as abnormal conditions or defects in a component, equipment, or sub-process, must be handled so that the system may continue to operate, and are typically addressed by implementing various domain specific safeguards. In complex systems, individual faults may combine to give rise to system failure, defined as a state or condition of not meeting a desirable or intended objective. The safety analysis of such systems is labour-intensive and requires a key creative step where safety engineers imagine what undesirable events can occur under which conditions.

Fault Tree Analysis (FTA) attempts to analyse the failure of systems by composing logic diagrams of separate individual faults to determine the probability of larger compound faults occurring. FTA is a commonly used method to derive and analyse potential failures and their impact on overall system reliability and safety. FTA has seen extensive refinement and widespread adoption and is today considered a proven and accepted reliability engineering technique, often required for regulatory approval of systems. However, fault trees are typically manually constructed and determining the probabilities of faults occurring in systems which exhibit stochastic behaviour in the course of their correct execution is difficult, time-consuming and error prone.

Typically a FTA is based on an informal description of the underlying system, or requires modeling the system in an FTA specific language. This makes it difficult to check the consistency of the analysis, because it is possible that causes are noted in the tree which do not lead to the failure (incorrectness) or that some causes of failure are overlooked (incompleteness).

To avoid these deficiencies, our approach derives the fault tree directly from the formal system model, under the assumption that any state can fail. We present a framework for the automated generation of fault trees from models of real-world process workflows, expressed in a formalised subset of the popular Business Process Modelling and Notation (BPMN) language. To capture uncertainty and unreliability in workflows, we extend this formalism with probabilistic non-deterministic branching. We present an algorithm that allows for exhaustive generation of possible error states that could arise in execution of the model, where the generated error states allow for both fail-stop behaviour and continuous system execution.

By employing stochastic model checking we calculate the probabilities of reaching each non-error state of the system.
Each generated error state is assigned a variable indicating its individual probability of occurrence. Our method can determine the probability of combined faults occurring, while accounting for the basic probabilistic structure of the system being modelled. From these calculations, a comprehensive fault tree is generated. Further, we show that annotating the model with rewards (data) allows the expected mean values of reward structures to be calculated at points of failure.

**General information**
- **State:** Published
- **Organisations:** Department of Management Engineering, Management Science, Operations Management, KPMG, Copenhagen
- **Authors:** Herbert, L. T. (Ekstern), Herbert-Hansen, Z. N. L. (Intern)
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- **Main Research Area:** Technical/natural sciences
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**Uncertainty Driven Action (UDA) model: A foundation for unifying perspectives on design activity**

This paper proposes the Uncertainty Driven Action (UDA) model, which unifies the fragmented literature on design activity. The UDA model conceptualises design activity as a process consisting of three core actions: information action, knowledge-sharing action, and representation action, which are linked via uncertainty perception. The foundations of the UDA model in the design literature are elaborated in terms of the three core actions and their links to designer cognition and behaviour, utilising definitions and concepts from Activity Theory. The practical relevance and theoretical contributions of the UDA model are discussed. This paper contributes to the design literature by offering a comprehensive formalisation of design activity of individual designers, which connects cognition and action, to provide a foundation for understanding previously disparate descriptions of design activity.

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- **Authors:** Cash, P. (Intern), Kreye, M. (Intern)
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  - Original language: English
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- **Electronic versions:** Uncertainty_Driven_Action_UDA_model_A_foundation_f.pdf
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- **Publication:** Research - peer-review › Journal article – Annual report year: 2017

**Uncertainty perception in bidding for Product-Service Systems under competition**

**General information**
- **State:** Accepted/In press
- **Organisations:** Department of Management Engineering, Engineering Systems, Loughborough University, University of Bath
- **Authors:** Kreye, M. (Intern), Goh, Y. M. (Ekstern), Newnes, L. (Ekstern)
- **Publication date:** 2017
- **Main Research Area:** Technical/natural sciences

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- **ISSN (Print):** 1478-4092
- **Ratings:**
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This paper contributes to design for behaviour change by testing the potential of priming via everyday products as a means of influencing users and dissolving conflicting individual and collective concerns. Self-construal is introduced as a core explanatory concept with respect to behaviours that unite individual and collective concerns. Two studies are reported. In the first, abstract representations of the target behaviour are elicited and incorporated into subconscious priming stimuli for each of the major senses: sight, hearing, touch, and smell. These primes are then evaluated in a controlled experiment. From these studies implications for both researchers and practitioners are identified. In particular, priming showed a significant effect across all senses.
Product Configuration Systems (PCS) are automatic solutions that can support and facilitate the sales and engineering processes. PCSs have recently attracted increased attention both from the researchers and practitioners. There are variety of challenges reported in the literature as consequences of using PCS, which reduces the usage frequency of the system. To address those challenges, IT integrations can be an effective solution to reduce the number of manual tasks and complexity inside PCSs and make PCSs more user friendly. However, the influence of integrating PCS to different IT systems on usage frequency has not been addressed in the literature. This paper aims to study the relationship of PCS usage frequency in terms of (1) different application area of the PCSs, and (2) integrations to different IT systems. The research method adopted in the paper is survey-based conducted in one company where the unit of analysis is operating PCS.

**Usage Frequency of Product Configuration Systems Relative to Integrations and Fields of Application**

Product Configuration Systems (PCS) are automatic solutions that can support and facilitate the sales and engineering processes. PCSs have recently attracted increased attention both from the researchers and practitioners. There are variety of challenges reported in the literature as consequences of using PCS, which reduces the usage frequency of the system. To address those challenges, IT integrations can be an effective solution to reduce the number of manual tasks and complexity inside PCSs and make PCSs more user friendly. However, the influence of integrating PCS to different IT systems on usage frequency has not been addressed in the literature. This paper aims to study the relationship of PCS usage frequency in terms of (1) different application area of the PCSs, and (2) integrations to different IT systems. The research method adopted in the paper is survey-based conducted in one company where the unit of analysis is operating PCS.

**General information**

**State:** Published

**Organisations:** Department of Mechanical Engineering, Engineering Design and Product Development, Operations Management, Department of Management Engineering, Management Science, University of Padova

**Authors:** Shafiee, S. (Intern), Kristjansdottir, K. (Intern), Hvam, L. (Intern), Battistello, L. (Ekstern), Sandrin, E. (Ekstern)
Use of electric vehicles or hydrogen in the Danish transport sector in 2050?: Use of electric vehicles or hydrogen

Denmark has an ambitious long-term goal to reduce greenhouse gas (GHG) emissions from the transport sector with an overall climate target to be independent of fossil-fuel consumption by 2050. We compare a likely scenario with two alternative ways to achieve the goal—either with a high percentage of electric vehicles (EV) or with a high percentage of hydrogen use for transportation. The STREAM model—an energy scenario simulating tool—is used to model the different scenarios and their integration with the electricity and heating systems. The major findings are that an increased share of EV can reduce the socioeconomic cost of the energy system in 2050. However, electricity demand for H2 generation via electrolysis is more flexible than EV charging and the production can therefore, to a larger degree be used to out-balance variable electricity surplus from a high share of wind energy in the power system, reducing the investments in backup capacity. Whether the hydrogen scenario (H2S) is more costly to implement than the EV scenario (EVS) mainly depends on the technological development—especially the improvement on the efficiency of the conversion from electricity to H2 and the cost of the hydrogen fuel cell vehicle. Therefore, the major drivers of a successful H2S are a high efficient flexible H2 production in 2050 and lower vehicle costs, which increase the stability of the power grid, compared to the EVS. Hence, from a socioeconomic view point, the technological path in innovation to achieve fossil-free transport systems should have vehicle costs and electrolyzers efficiency as their main drivers toward 2050.
Use of Taxi-Trip Data in Analysis of Demand Patterns for Detection and Explanation of Anomalies

Because of environmental and economic stress, current strong investment in adaptive transport systems can efficiently use capacity, minimizing costs and environmental impacts. The common vision is of a system that dynamically changes itself (the supply) to anticipate the needs of travelers (the demand). In some occasions, unexpected and unwanted demand patterns are noticed in the traffic network; these patterns lead to system failures and cost implications. Significantly, low speeds or excessively low flows at an unforeseeable time are only some of the phenomena that are often noticed and need to be explained for a transport system to develop a better future response. The objective of this research was the formulation of a methodology that could identify anomalies on traffic networks and correlate them with special events by using Internet data. The main subject of interest in this study was the investigation of why traffic congestion was occurring as well as why demand fluctuated on days when there were no apparent reasons for such phenomena. The system was evaluated by using Google’s public data set for taxi trips in New York City. A “normality” baseline was defined at the outset and then used in the subsequent study of the demand patterns of individual days to detect outliers. With the use of this approach it was possible to detect fluctuations in demand and to analyze and correlate them with disruptive event scenarios such as extreme weather conditions, public holidays, religious festivities, and parades. Kernel density analysis was used so that the affected areas, as well as the significance of the observed differences compared with the average day, could be depicted.

General information
State: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling
Authors: Markou, I. (Intern), Rodrigues, F. (Intern), Pereira, F. C. (Intern)
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Web of Science (2018): Indexed yes
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Web of Science (2017): Indexed Yes
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Scopus rating (2016): CiteScore 0.75 SJR 0.494 SNIP 0.722
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.547 SNIP 0.769 CiteScore 0.6
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.529 SNIP 0.8 CiteScore 0.58
Web of Science (2014): Indexed yes
This document represents the official Documentation of USEtox, the United Nations Environment Programme (UNEP) / Society of Environmental Toxicology and Chemistry (SETAC) scientific consensus model for characterizing human and ecotoxicological impacts of chemical emissions in life cycle assessment. Main output of USEtox is a database of «recommended» and «indicative» characterization factors for human toxicity and freshwater ecotoxicity, based on modelling of environmental fate, exposure, and effect parameters for the substances. Due to deficiencies in the model or the available substance data, the «indicative» factors are accompanied by a higher uncertainty than the «recommended» factors, which should be considered when applying the factors and interpreting the results.

Using data- and network science to reveal iterations and phase-transitions in the design process

Understanding the role of iterations is a prevalent topic in both design research and design practice. Furthermore, the increasing amount of data produced and stored by companies leaves traces and enables the application of data science to learn from past design processes. In this article, we analyse a documentlog to show the temporal evolution of a real design process of a power plant by using exploratory data analysis and network analysis. We show how the iterative nature of the design process is reflected in archival data and how one might re-construct the design process, involving iterations between many parties, including the client, external consultants, suppliers, and designers. We also show how people use different representations during the design process and how this is associated with a design phase-transition in the process. Finally, we relate our findings with the literature on iterations and discuss implications for research and practice with application to project management and process modelling.

Using embedded design structures to unravel a complex decision in a product development system

Early design decisions have an impact on downstream product development processes. Poor decisions can reduce efficiency and effectiveness, and have a detrimental effect on product quality, delivery time, and cost. However, the range of tools suitable for use in early design is limited, in part because of ambiguity in available design definitions. This paper reports research that investigated the role of complex decision making in a quality incident that occurred in the development of a complex product system. A case study approach with document analysis and semi-structured interviews was used. Data were analysed using lenses from both social sciences and engineering design. In this paper, we report the use of embedded design structures to gain insights into the downstream consequences of design decisions. Results indicate that embedded product, process and supply network structures have the potential to underpin a new generation of design tools for considering downstream complexities arising from early design choices. Such tools could both improve the quality of design decisions and support improved management of development processes by highlighting areas of future risk.
Using Global Trends as Catalysts for City Transition

Urbanization process is triggered by population growth and technological advancement. Cities are accumulating global dynamics, gathering flows of people, energies and consequent risks. As a result, our habitat is facing a rapid transition [1]. City can use opportunities of momentum, planning and acting in response to the events or it can miss the chance, losing in the global competition. There is a considerable interest in finding, what influences city’s prosperity. Global trends and the socio-demographic evolution are recognized as main overall powers. This study examines how these forces stimulate cities and how to employ them in a development process, in order to achieve a successful city transition.

Searching for essential elements directing towards inclusive and successful city transition, the urbanization is studied. Global processes influence cities significantly with individual, different outcomes, what is examined in case study part. Case study provides cross sector analyses of three European cities, basing on national statistics, international and local databases. The study indicates that global forces and local conditions are of similar significance for city development. Case study illustrates divergence of outcomes generated by global forces. Therefore, a difficulty in building common approach, as there is no generic challenge-response. However, by identifying and mapping trends and patterns, inclusive and context-dependent strategy can be created appropriately, contributing to overall sustainability. While creating development strategies and future visions is a common practice, it lacks tools to identify the context-dependent factors. Specific conditions and patterns of city development are built in longtime perspective and the social short termism often counteracts improvement.

To work with the overall forces city needs to recognize its unique situation. The current stage of urban development differs from city to city, what allows to make transferable learnings and stop repeating the same steps on the development path, regardless of their evaluation.

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Organisations: Department of Management Engineering
Authors: Gebalska, B. A. (Intern)
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Scopus rating (2014): CiteScore 0.53
Scopus rating (2013): CiteScore 0.4
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Using LCA as a screening tool for bioenergy options – case study of a meat processing plant

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Colley, T. A. (Intern)
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Using OR + AI to Predict the Optimal Production of Offshore Wind Parks: A Preliminary Study
In this paper we propose a new use of Machine Learning together with Mathematical Optimization. We investigate the question of whether a machine, trained on a large number of optimized solutions, can accurately estimate the value of the optimized solution for new instances. We focus on instances of a specific problem, namely, the offshore wind farm layout optimization problem. In this problem an offshore site is given, together with the wind statistics and the characteristics of the turbines that need to be built. The optimization wants to determine the optimal allocation of turbines to maximize the park power production, taking the mutual interference between turbines into account. Mixed Integer Programming models and other state-of-the-art optimization techniques, have been developed to solve this problem. Starting with a dataset of 2000+ optimized layouts found by the optimizer, we used supervised learning to estimate the production of new wind parks. Our results show that Machine Learning is able to well estimate the optimal value of offshore wind farm layout problems.

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Authors: Fischetti, M. (Intern), Fraccaro, M. (Intern)
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Værktøjskasse til Agil Stage-Gate®: Ny model for udviklingsprojekter i mellemstore virksomheder

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Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Gemba Innovation A/S, Dansk Industri
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Value Chain Optimisation of Biogas Production
With an increased focus on climate change and an increasing number of unpredictable and fluctuating renewable energy sources, a predictable renewable energy carrier is needed to stabilise energy production. Biogas can potentially be used for this but biogas projects struggle with becoming economically feasible. In this PhD thesis, the focus is to create models for investigating the profitability of biogas projects by: 1) including the whole value chain in a mathematical model and considering mass and energy changes on the upstream part of the chain; and 2) including profit allocation in a value chain consisting of heterogeneous owners. To address the first point, a mathematical model based on network-flow optimisation has been developed to include the mass and energy losses in the chain. Furthermore, a method for simplifying the calculation of transportation costs has been included. Last, the costs on the biogas plant has been included in the model using economy of scale. For the second point, a mathematical model considering profit allocation was developed applying three allocation mechanisms. This mathematical model can be applied as a second step after the value chain optimisation. After concentrating on how to make biogas economically feasible, the use of biogas in the energy system is considered by applying the energy systems model Balmorel and: 1) increasing the cost of CO2 to reach a combined goal of biogas and biomethane; and 2) including the production of renewable gas and fuels in the energy systems model to find the optimal end use of each type of gas and fuel. The main contributions of this thesis are the methods developed on plant level. Both the mathematical model for the value chain and the profit allocation model can be generalised and used in other industries where mass and value of the goods in the chain changes independently from each other and where several heterogeneous owners interact to make the value chain work. This could be other bioenergy projects as well as e.g. a value chain for clothing or cars.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Jensen, I. G. (Intern)
Number of pages: 185
Publication date: 2017
Value Chain Structures that Define European Cellulosic Ethanol Production

Production of cellulosic ethanol (CE) has not yet reached the scale envisaged by the literature and industry. This study explores CE production in Europe to improve understanding of the motivations and barriers associated with this situation. To do this, we conduct a case study-based analysis of CE production plants across Europe from a global value chain (GVC) perspective. We find that most CE production plants in the EU focus largely on intellectual property and are therefore only at the pilot or demonstration scale. Crescentino, the largest CE production facility in Europe, is also more interested in technology licensing than producing ethanol. Demonstration-scale plants tend to have a larger variety of feedstocks, whereas forestry-based plants have more diversity of outputs. As scale increases, the diversity of feedstocks and outputs diminishes, and firms struggle with feedstock provisioning, global petroleum markets and higher financial risks. We argue that, to increase CE production, policies should consider value chains, promote the wider bio-economy of products and focus on economies of scope. Whereas the EU and its member states have ethanol quotas and blending targets, a more effective policy would be to seek to reduce the risks involved in financing capital projects, secure feedstock provisioning and support a diversity of end products.
Value co-creation for FM Innovation: Is it possible, and if yes, how?

No matter the industry, co-creation of value is a hot topic. Marketing specialists swear by it; manufacturers and service providers try to integrate it in their innovation practices; researchers study it. But what is value co-creation, and how does it apply to FM? Value co-creation is grounded in the recognition that firms are no longer in full charge of deciding upon the value to be offered to markets, but rather need to continuously cooperate with their customers, who become active collaborators in the creation of value. Value, in fact, is jointly created by supply and demand. The former offer the frame and resources for the co-creation of value, and the latter make their needs and expectations explicit and share their knowledge on how to satisfy them. In FM, value is created first and foremost by delivering and maintaining services that support the core business of organisations. According to the EN15221-1 definition, FM is “the integration of processes within an organization to maintain and develop (…) services which support and improve the effectiveness of its primary activities”. In other words, FM is expected to create value for the organization it belongs to, by at least delivering and maintaining services that support the core business. Moreover, FM can add value by contributing to the organisational performance it belongs to (Voordt & Jensen, 2017).
Viewpoint: Expand your career horizons with a position abroad

It's job market season again. Are you sticking your toe in the water? Looking for a new challenge? A change of weather? Why not make a big splash and consider a position beyond your country's borders? Of course, for decades institutions in English-speaking nations have filled their ranks with recruits from around the world, but rarely does an academic from an English-speaking nation make the move abroad.

What does morality require when we disagree?

In “Principled Compromise and the Abortion Controversy” Simon C. May argues that we do not have a principled moral reason to compromise. While I seek to understand how more precisely we are to understand this suggestion, I also object to it: I argue that we have a principled moral reason to accept democratic decisions that we disagree with, and that this can only be so if disagreement can change what the all things considered right political position is. But if this is so, then also a principled moral reason to compromise is possible. I suggest that there is a class of procedures, including compromise, voting, expert delegation, and coin flip, such that when we disagree about what justice requires, we have a principled moral reason (though not necessarily a decisive reason) to engage in one of these procedures.
What, if safe is not enough? Addressing the need for more sustainable pesticide use

General information
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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Fantke, P. (Intern)
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Source: PublicationPreSubmission
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What is in a business case? Business cases as a tool-in-use for promoting water management practices in the food sector
This paper explores the role of business cases as a tool for supporting decision-making processes regarding water management. Based on an analysis of survey and interview data from 300þ organisations within the European food sector, it is concluded that the relative emphasis on business cases and payback times influences the average level of water management engagement. However, the findings from the analysis also indicate that use of business cases are not set in stone but can be adapted and changed through ongoing dialogue and negotiations. The paper contributes to the existing academic literature by moving beyond generic discussions of the business case for corporate sustainability to exploring the concrete use of business cases as a decision-making tool for managers.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Water & Waste, Copenhagen Business School
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Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
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BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.706 SNIP 2.328 CiteScore 4.07
Which role for Life Cycle Thinking in the definition of meaningful indicators for the circular economy?

There is an urgent need to provide companies with guidance on how to measure the performance of their products and activities in the implementation of circular economy (CE) strategies. This paper aims to contribute to the discussion on the identification of the most suited metrics for CE at the micro level. We discuss the role of Life Cycle Thinking (LCT) in the development of meaningful circularity indicators at the product level taking into account the absolute perspective on CE. Our analysis is limited to the environmental aspect of sustainability with a focus on the climate change impact. We use a case study of an aluminium can to illustrate the challenges arising from the use of some of the available metrics either directly or indirectly based on LCT, i.e. the Material Circularity Indicator and the Materials Reutilization Score for the product and the Sectorial Decarbonization Approach at the corporate level.
Which uncertainty is important in multistage stochastic programmes?: A case from maritime transportation

Given that the scope of stochastic programming is to suggest good decisions and not to estimate probability distributions, we demonstrate in this paper how to numerically evaluate which properties of random variables are more important to capture in a stochastic programming model. Such analysis, performed before data collection, can indicate which information should be primarily sought, and which is not critical for the final decision. We apply the analysis to a real-life instance of the maritime fleet renewal. Results show that some properties of the stochastic phenomena, such as the correlation between random variables, have very little influence on the final decision.

General information
State: Published
Organisations: Department of Management Engineering, Norwegian School of Economics, Norwegian University of Science and Technology
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Number of pages: 13
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BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.474 SNIP 0.449 CiteScore 0.55
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ISI indexed (2013): ISI indexed yes
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Scopus rating (2012): SJR 0.591 SNIP 0.682 CiteScore 0.73
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Scopus rating (2011): SJR 0.372 SNIP 0.745 CiteScore 0.56
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.795 SNIP 0.716
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.475
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.352
Scopus rating (2007): SJR 0.179
Scopus rating (2006): SJR 0.222
Scopus rating (2005): SJR 0.136
Which variety is free? Discerning the impact of product variety in the process industry

In the pursuit of mass customization, it is a great challenge for companies to maintain mass production efficiencies while producing a wide range of products. This poses an even greater challenge to process industry manufacturing systems which are built for high volume, low variety operations and which are sensitive to changes in process parameters. Many studies have been performed to quantify the impact of product variety on the efficiency of automotive assembly processes, but little work has been done to address process manufacturing systems. This study aims to determine the effects of individual product features on machine productivity at a process industry manufacturer. A lasso regression model is developed and tested using actual product and process level data from a stone wool manufacturer in central Europe.

Results show that product features are less correlated to machine efficiency than process parameters, such as planning and crew performance.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management
Authors: Trattner, A. L. (Intern), Hvam, L. (Intern), Herbert-Hansen, Z. N. L. (Intern)
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Electronic versions: Moseley_DiscerningImpactVariety.pdf
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Wind2050 – a transdisciplinary research partnership about wind energy

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Aalborg University
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Source-ID: 2348405225
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Wind power material stocks in a circular economy context

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Corona, A. (Intern), Bonou, A. (Intern), Niero, M. (Intern), Olsen, S. I. (Intern)
Number of pages: 1
Publication date: 2017
Working in a broad partnership in the Kenya Miniwind Project

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Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Nygaard, I. (Intern)
Number of pages: 6
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Workspace experiments: a journey on planning participatory design

Summative Statement: This paper presents a resource material in planning and performing participatory workspace design processes. This material brings up design dialogues into focus and gives insights on how to stage them, bridging the gap of merging user involvement with the well-defined design work-practice. Problem statement: There is a widespread interest in implementing user involvement in major building and construction projects. Nevertheless, it is also often difficult to translate the contributions from users to workspace design that seriously take on board the employees’ specific work practices as a platform for a desired change. There is a need of tool that manages to travel into a well-defined design work-practice and merge with it. Research Objective: We developed a resource material to merge user involvement within current designers’ practices when designing new workspaces. The aim was to test how a participatory prototyping process can help developing such a material aimed at architects and other participants on workspace design projects. Methodology: We developed the resource material through a participatory “prototyping process”, that is through a mutual learning process taking place in a cooperative design setting. The material was gradually built during a research project, including three workshops emphasizing joint exploration by architects, consulting engineers and health & safety consultants. This method was used because we could discuss, explore, and try out various aspects of the new resource material with its prototypes and thus mediate communication among the different participants of the process, content and format being gradually developed through participation. Results: The result was a flexible resource material for designers as a tool to help building a participatory process specifically for each project. The material consists of a toolbox containing: 1) three booklets, 2) “playing” cards, 3) a game board, and 4) a leaflet explaining the main process the tool aims at bringing participants through. The booklets are the core of the toolbox and they aim at giving ideas and inspiration on methods and activities that can be part of the participatory process. The cards and the game board aim at making the use of the resource material a participatory and interactive activity in itself. The leaflet provides some guidance the participatory planning. Discussion: As we see it, the resource material was well accepted during a training section and some participants were happy they in fact used the time during the session to solve some planning issues for their projects. The material became an asset that streamlined the planning of a participatory process while putting the key themes within user involvement and workspace design on the agenda. It still has room for improvements, but it is a good starting to introduce participatory methods into the design practices and to facilitate the planning for such activities. Conclusions: The task of involving users in design processes is not easy and it can be a challenge to merge these activities. The resource material helps staging the interventions and activities and preparing the materials to be used. On a long term, we see the resource material as an open source, where new methods and inspiring ideas can always be added.

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology
Authors: Souza da Conceição, C. (Intern), Broberg, O. (Intern)
WW LCI v2: A second-generation life cycle inventory model for chemicals discharged to wastewater systems

We present a second-generation wastewater treatment inventory model, WW LCI 2.0, which on many fronts represents considerable advances compared to its previous version WW LCI 1.0. WW LCI 2.0 is a novel and complete wastewater inventory model integrating WW LCI 1.0, i.e. a complete life cycle inventory, including infrastructure requirement, energy consumption and auxiliary materials applied for the treatment of wastewater and disposal of sludge and SewageLCI, i.e. fate modelling of chemicals released to the sewer. The model is expanded to account for different wastewater treatment levels, i.e. primary, secondary and tertiary treatment, independent treatment by septic tanks and also direct discharge to natural waters. Sludge disposal by means of composting is added as a new option. The model also includes a database containing statistics on wastewater treatment levels and sludge disposal patterns in 56 countries. The application of the new model is demonstrated using five chemicals assumed discharged to wastewater systems in four different countries. WW LCI 2.0 model results shows that chemicals such as diethylenetriamine penta (methylene phosphonic acid) (DTPMP) and Diclofenac, exhibit lower climate change (CC) and freshwater ecotoxicity (FET) burdens upon wastewater treatment compared to direct discharge in all country scenarios. Results for Ibuprofen and Acetaminophen (more readily degradable) show that the CC burden depends on the country-specific levels of wastewater treatment. Higher treatment levels lead to lower CC and FET burden compared to direct discharge. WW LCI 2.0 makes it possible to generate complete detailed life cycle inventories and fate analyses for chemicals released to wastewater systems. Our test of the WW LCI 2.0 model with five chemicals illustrates how the model can provide substantially different outcomes, compared to conventional wastewater inventory models, making the inventory dependent upon the atomic composition of the molecules undergoing treatment as well as the country specific wastewater treatment levels.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Indian Institute of Technology, Bombay, 2.-O LCA Consultants APS
Authors: Kalbar, P. P. (Ekstern), Muñoz, I. (Ekstern), Birkved, M. (Intern)
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Web of Science (2014): Indexed yes
Development of Pathways to Achieve the SE4ALL Energy Efficiency Objective: Global and Regional Potential for Energy Efficiency Improvements

This study examines the three objectives of the UN Sustainable Energy for All (SE4ALL) initiative:

1. Ensure universal access to modern energy services by 2030.
2. Double the global rate of improvement in energy efficiency (from 1.3% to 2.6% annual reduction in energy intensity of GDP) by 2030.
3. Double the share of renewable energy in global final energy from 18% to 36% by 2030.

The integrated assessment model, ETSAP-TIAM, was used in this study to compare, from an economic optimization point of view, different scenarios for the development of the energy system between 2010 and 2030. This analysis is conducted on a global and regional scale. The scenarios were constructed to analyze the effect of achieving the SE4ALL energy efficiency objective, the SE4ALL renewable energy objective, both together, and all three SE4ALL objectives.
Synergies exist between renewable energy and energy efficiency. When the SE4ALL renewable energy objective is achieved, the economically optimal solution produced by ETSAP-TIAM also includes a reduction in energy intensity: globally, the compound annual reduction in energy intensity of GDP is 1.8% when the renewable energy objective is achieved. Likewise, a scenario that achieves the SE4ALL energy efficiency objective results in a solution that is halfway to the SE4ALL renewable energy objective: the 2030 global renewable energy share of total final energy is 26%. On a global scale, the renewable shares in every sector increase when the SE4ALL energy efficiency objective is achieved. The results from ETSAP-TIAM suggest that the SE4ALL energy access objective is not as synergetic with the other two objectives. When traditional biomass is phased out, the results show that it is more cost-effective to replace it with non-renewable energy sources for residential heating, cooking, and hot water.
Complexity Management - A multiple case study analysis on control and reduction of complexity costs

Complexity tends to be arguably the biggest challenge of manufacturing companies. The motivation of further studying complexity is a combination between the existing literature and the practical experiences from the industry. Based on the latest trend companies are trying to supply a growing mix of products, with features more custom-made to cover individual needs, both regarding characteristics of products and support services. This necessity leads to a considerable increase of the complexity in the company, which affects the product portfolio, production and supply chain, market segments, IT systems, and business processes. In order to identify and eliminate complexity, several approaches are used, both by researchers and practitioners. The purpose of this thesis is to contribute to the existing knowledge of complexity management theory. This research focuses on the relationship between product and process complexity. The possible factors for describing this correlation are identified and defined as complexity cost factors (CCFs). By identifying the CCFs this research intends to analyze the most relevant processes where the complexity and cost are directly related to the complexity of products. In this way, it will be possible to quantify the exact cost impact on those processes for each product variant. Furthermore, initiatives regarding complexity reduction are investigated. Standardization in product design, increased reusability of components, postponement of the customer order decoupling point (CODP) and utilization of configuration systems are further examined in terms of their complexity reduction effects. The research is supplemented with empirical evidence from several manufacturing companies. Finally, the evaluation of the obtained results indicates a strong managerial and theoretical potential for the control and reduction of complexity in manufacturing industries and pinpoints areas for further investigation.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management, Department of Mechanical Engineering, Engineering Design and Product Development
Authors: Myrodia, A. (Intern), Hvam, L. (Intern), Mortensen, N. H. (Intern)
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Resilience Thinking as an Interdisciplinary Guiding Principle for Energy System Transitions

Resource usage and environmental consequences of most current energy systems exceed planetary boundaries. The transition to sustainable energy systems is accompanied by a multitude of research methods, as energy systems are complex structures of technical, economical, social and ecological interactions. The description of different discipline’s perspectives in this paper show that a more mutual understanding between disciplines of their respective focus is necessary as they partly create internally competitive views arising from differing emphasis of connected matters. The purpose of this paper is to present a framework for interdisciplinary proceeding in a complex energy system transition process. Resilience thinking is chosen as a core concept for a more holistic view on sustainable energy system development. It is shown that it is already widely used in different disciplines connected to energy system research and is especially suitable due to its wide application across disciplines. The seven principles of resilience thinking (maintain redundancy and diversity, manage connectivity, manage slow variables and feedback, foster complex adaptive systems thinking, encourage learning, broaden participation, and promote polycentric governance systems) are chosen as the basis for a procedure that can be utilized to increase the interdisciplinary perspectives of energy system transitions. For energy transition processes based on scenario development, backcasting and pathway definition, resilience thinking principles are used to assess the resilience of the target energy system, the pathway resilience and the design of the scenario process with respect to the probability of a resilient outcome. The described procedure consisting of questions and parameters can be applied as a first attempt for a resilience assessment of energy transition processes. The perspective of resilience in sustainable energy systems strengthens the importance of diversity, redundancy and flexibility, which reduces the current dominant focus on efficiency of the overall system.

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Organisations: Department of Management Engineering, Systems Analysis
Authors: Wiese, F. (Intern)
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Byggeriet skal gøre en større forskel

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Organisations: Department of Management Engineering, Engineering Systems
Authors: Bonke, S. (Intern), Thuesen, C. (Intern), Koch-Ørvad, N. (Intern)
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Integrating load-balancing into multi-dimensional bin-packing problems

General information
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Organisations: Department of Management Engineering, Management Science
Authors: Trivella, A. (Intern), Pisinger, D. (Intern)
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Organisations: Data- and Modelcenter, Department of Management Engineering
Authors: Christiansen, H. (Intern)
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Exact and Heuristic Methods for Integrated Container Terminal Problems

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management, Transport DTU, Operations Research
Authors: Iris, C. (Intern), Larsen, A. (Intern), Røpke, S. (Intern), Pacino, D. (Intern)
Number of pages: 231
Publication date: May 2016

Black boxes on wheels: research challenges and ethical problems in MEA-based robotics
Robotic systems consisting of a neuron culture grown on a multielectrode array (MEA) which is connected to a virtual or mechanical robot have been studied for approximately 15 years. It is hoped that these MEA-based robots will be able to address the problem that robots based on conventional computer technology are not very good at adapting to surprising or unusual situations, at least not when compared to biological organisms. It is also hoped that insights gained from MEA-based robotics can have applications within human enhancement and medicine. In this paper, I argue that researchers within this field risk overstating their results by not paying enough attention to fundamental challenges within the field. In particular, I investigate three problems: the coding problem, the embodiment problem and the training problem. I argue that none of these problems have been solved and that they are not likely to be solved within the field. After that, I discuss whether MEA-based robotics should be considered pop science. Finally, I investigate the ethical aspects of this research.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Bentzen, M. M. (Intern)
Pages: 19-28
Publication date: 23 Mar 2016
Main Research Area: Technical/natural sciences
Restructuring of workflows to minimise errors via stochastic model checking: An automated evolutionary approach

This article presents a framework for the automated restructuring of stochastic workflows to reduce the impact of faults. The framework allows for the modelling of workflows by means of a formalised subset of the BPMN workflow language. We extend this modelling formalism to describe faults and incorporate an intention preserving stochastic semantics able to model both probabilistic- and non-deterministic behaviour.

Stochastic model checking techniques are employed to generate the state-space of a given workflow. Possible improvements obtained by restructuring are measured by employing the framework’s capacity for tracking real-valued quantities associated with states and transitions of the workflow. The space of possible restructurings of a workflow are explored by means of an evolutionary algorithm, where the goals for improvement are defined in terms of optimising quantities, typically employed to model resources, associated with a workflow.

The approach is fully automated and only the modelling of the production workflows, potential faults and the expression of the goals require manual input. We present the design of a software tool implementing this framework and explore the practical utility of this approach through an industrial case study in which the risk of production failures and their impact are reduced by restructuring the workflow.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Department of Management Engineering, Management Science
Authors: Herbert, L. T. (Intern), Hansen, Z. N. L. (Intern)
Pages: 351-365
A Benders Decomposition-Based Matheuristic for the Cardinality Constrained Shift Design Problem

The Shift Design Problem is an important optimization problem which arises when scheduling personnel in industries that require continuous operation. Based on the forecast, required staffing levels for a set of time periods, a set of shift types that best covers the demand must be determined. A shift type is a consecutive sequence of time periods that adheres to legal and union rules and can be assigned to an employee on any day. In this paper we introduce the Cardinality Constrained Shift Design Problem; a variant of the Shift Design Problem in which the number of permitted shift types is bounded by an upper limit. We present an integer programming model for this problem and show that its structure lends itself very naturally to Benders decomposition. Due to convergence issues with a conventional implementation, we propose a matheuristic based on Benders decomposition for solving the problem. Furthermore, we argue that an important step in this approach is finding dual alternative optimal solutions to the Benders subproblems and describe an approach to obtain a diverse set of these. Numerical tests show that the described methodology significantly outperforms a commercial mixed integer programming solver on instances with 1241 different shift types and remains competitive for larger cases with 2145 shift types. On all classes of problems the heuristic is able to quickly find good solutions. © 2016 Elsevier B.V.

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Access over ownership: the case of meeting facilities in Lyngby

Collaborative Consumption, access economy or the sharing economy are all terms describing the new fast growing business built on the sharing of resources and promoting access over ownership. It is a paradigm shift that has made it to the Times magazine list of the “10 ideas that will change the world”. Within this overall paradigm, shared space, is also gaining grounds. The purpose of the study is to investigate the attitude towards shared space in an urban context with a particular focus on meeting facilities. To what degree is there an interest in sharing meeting facilities within a city or a municipality? The Lyngby-Taarbæk City of Knowledge is used as case, as this strategic collaboration on municipal level includes a vision of sharing facilities to stimulate regional development. The attitude towards shared space in the Lyngby-Taarbæk City of Knowledge is studied in a three-step qualitative research process. The first survey investigates the City of Knowledge’s members attitude towards shared space in general with questions like, what are you most likely to share with others? And what would you like to gain access to? A workshop further explored motivations and practical needs. The second survey investigates in particular the attitude towards shared meeting facilities. The Brinkø Typology of Shared Use of Space and Facilities is used as the theoretical frame of the study (Brinkø et al 2015). This study show that the members of the Lyngby-Taarbæk City of Knowledge collaboration are very positive towards the concept of shared space, but more reluctant about sharing own facilities. A majority of the informants are often using externally owned facilities for meetings and events, and they prefer professional meeting facilities to schools, universities and sports facilities. This point to the need for buildings owners/operators to develop relevant service concepts, if a shared space strategy, should increase the use rate of existing buildings. The study show that in the Lyngby-Taarbæk City of Knowledge there is a positive attitude towards shared space as concept and as local strategy for gaining access to e.g. meeting facilities. The survey also demonstrates the member’s experience of barriers, which suggest that there are practical barriers to overcome before access is more important than ownership, not only in theory, but also in practice.

Accounting for effect modifiers in ergonomic intervention research

Literature reviews suggest that tools facilitating the ergonomic intervention processes should be integrated into rationalization tools, particular if such tools are participative. Such a Tool has recently been developed as an add-in module to the Lean tool "Value Stream Mapping" (VSM). However, in the investigated context this module seems not to have any direct impact on the generation of proposals with ergonomic consideration. Contextual factors of importance seem to be e.g. allocation of sufficient resources and if work environment issues are generally accepted as part of the VSM methodology.
Accounting for the Theory of Planned Behaviour in departure time choice

Motivating people to change their departure time could play a key role in reducing peakhour congestion, which remains one of the most prevalent transport problems in large urban areas. To achieve this behavioural change, it is necessary to better understand the factors that influence departure time choice. So far departure time choice modelling focussed mainly on objective factors, such as time and costs as main behavioural determinants. In this study, we derived psychological factors based on the Theory of Planned Behaviour, estimated them based on structural equation modelling, and included them into a discrete choice model. The psychological factors were measured based on an online questionnaire addressed to car commuters to the city centre of Copenhagen (N = 286). The questionnaire additionally included a travel diary and a stated preference experiment with nine departure time choice scenarios. All psychological factors had a significant effect on departure time choice and could improve the model as compared to a basic discrete choice model without latent constructs. As expected, the effects of the psychological factors were different depending on framework conditions: for people with fixed starting times at work, the intention to arrive at work on time (as estimated by subjective norm, attitude, perceived behavioural control) had the strongest effect; for people with flexible working hours, the attitude towards short travel time was most relevant. Limitations, the inclusion of additional psychological factors and their possible interactions are discussed.

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A comparison of two exact methods for passenger railway rolling stock (re)scheduling

The assignment of rolling stock units to timetable services in passenger railways is an important optimization problem that has been addressed by many papers in different forms. Solution approaches have been proposed for different planning phases: strategic, tactical, operational, and real-time planning. In this paper we compare two approaches within the operational and real-time planning phase. The first exact approach is based on a known Mixed Integer Linear Program (MILP) which is solved using CPLEX. The second approach is a new method that is an extension of a recently introduced MILP, which is solved using a column and row generation approach. In this paper, we benchmark the performance of the methods on networks of two countries (Denmark and The Netherlands). We use the approaches to make daily schedules and we test their real-time applicability by performing tests with different disruption scenarios. The computational experiments demonstrate that both models can be used on both networks and are able to find optimal rolling stock circulations in the different planning phases. Furthermore, the results show that both approaches are sufficiently fast to be used in a real-time setting.
A consistent framework for modeling inorganic pesticides: Adaptation of life cycle inventory models to metal-base pesticides

Quantifying over the life cycle of a product or service the chemical emissions to the environment in the life cycle inventory (LCI) phase is typically based on generic assumptions. Regarding the LCI application to agricultural systems the estimation of pesticide emissions is often based on standard emission factors (percentages) or dynamic models base on specific application scenarios that describe only the behavior of organic pesticides. Currently fixed emission fractions for pesticides dearth to account for the influence of pesticide-specific function to crop type and application methods. On the other hand the dynamic models need to account for the variability in this interactions in emissions of inorganic pesticides. This lack of appropriate models to estimate emission fractions of inorganic pesticides results in a lower accuracy when accounting for emissions in agriculture, and it will influence the outcomes of the impact profile. The pesticide emission model PestLCI 2.0 is the most advanced currently available inventory model for LCA intended to provide an estimation of organic pesticide emission fractions to the environment. We use this model as starting point for quantifying emission of inorganic pesticides and customize it taking into account the complex chemistry of metals in order to properly reflect the their environmental fate behavior. We identified specific needs for metal-specific pesticides emission modeling looking at the current PestLCI structure and propose an approach for the different metal-related processes and interactions. The proposed framework takes into consideration the speciation of the metals to accurately
describe the soil processes (runoff and leaching). The processes involving degradation are assumed not significant for metals and volatilization is only accounted for special cases (i.e. mercury). And finally, a new module of erosion is included in the modified PestLCI model, because the transport of soil particles to which the metals are bound needs to be considered as potential source of emissions to surface water. In conclusion, we provide a starting point to better estimate metal-specific pesticide emission fractions, addressing the issue of inorganic pesticides for inventory analysis in LCA of agricultural systems.

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, IRTA, Food Safety Programme, Institute of Agri-food Research and Technology
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Active thermography and post-processing image enhancement for recovering of abraded and paint-covered alphanumeric identification marks
Alphanumeric marking is a common technique employed in industrial applications for identification of products. However, the realised mark can undergo deterioration, either by extensive use or voluntary deletion (e.g. removal of identification numbers of weapons or vehicles). For recovery of the lost data, many destructive or non-destructive techniques have been endeavoured so far, which however present several restrictions. In this paper, active infrared thermography has been exploited for the first time in order to assess its effectiveness in restoring paint covered and abraded labels made by means of different manufacturing processes (laser, dot peen, impact, cold press and scribe). Optical excitation of the target surface has been achieved using pulse (PT), lock-in (LT) and step heating (SHT) thermography. Raw infrared images were analysed with a dedicated image processing software originally developed in Matlab™, exploiting several methods, which include thermographic signal reconstruction (TSR), guided filtering (GF), block guided filtering (BGF) and logarithmic transformation (LN). Proper image processing of the raw infrared images resulted in superior contrast and enhanced readability. In particular, for deeply abraded marks, good outcomes have been obtained by application of logarithmic transformation to raw PT images and block guided filtering to raw phase LT images. With PT and LT it was relatively easy to recover labels covered by paint, with the latter one providing better thermal contrast for all the examined targets. Step heating thermography never led to adequate label identification instead.

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Activity-based Sustainability Assessment of Highly Automated Manufacturing

Sustainability of technology is a multifaceted endeavor and a main requirement from industry is to make it a profitable business case with clearly defined targets. To achieve that, a new assessment framework and applicable method [1] is presented which has been developed closely with industry. It uses a top-down decision-making process known from financial target setting for each cost center and the well-known life-cycle perspective according to ISO 14040 [2] in Sustainability Assessment. Thereby it is possible to allocate absolute environmental thresholds of functionalities (e.g. “transportation”) down to smallest production units by using activity-based target setting in a consistent way to lowers risks in the planning phase of products and production.

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A Cubic Function Model for Railway Line Delay

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Adding Value to Facilities Management with Information Technology
This PhD project investigates implementation and use of Information Systems (IS) and Information Technologies (IT) in the Facilities management (FM) business domain. This investigation is relevant because implementation and use of IS/IT in FM has potentials for improvements which can provide additional value to FM and the organisations which FM supports. The empirical data was collected from more than 16 IS implementation and use cases in FM departments within private and public organisations in Denmark, Sweden, Germany and Australia. Data from 5 of the 16 cases are used as main input to the analysis in this study. The cases have revealed a common structure of the elements constituting the IS and the Business Processes (BP) which the IS are intended to support. Based on this structure an IS-BP framework for analysing the interaction between Business Strategy, BP and the IS supporting the BP is proposed. Specific issues are studied concerning the implementation processes, such as IS project scope, and formal control mechanisms used on the organisational IS level and on the IS project level. Also issues related to the change taking place such as the added value of IS implementation are studied. Finally IS strategy as the strategy of the use of IS to support business strategy (BS) is studied.

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Organisations: Department of Management Engineering, Engineering Systems, Management Science, Implementation and Performance Management, Department of Civil Engineering, Section for Building Design
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Addressing Climate Change Mitigation and Adaptation Together: A Global Assessment of Agriculture and Forestry Projects
Adaptation and mitigation share the ultimate purpose of reducing climate change impacts. However, they tend to be considered separately in projects and policies because of their different objectives and scales. Agriculture and forestry are related to both adaptation and mitigation: they contribute to greenhouse gas emissions and removals, are vulnerable to climate variations, and form part of adaptive strategies for rural livelihoods. We assessed how climate change project design documents (PDDs) considered a joint contribution to adaptation and mitigation in forestry and agriculture in the tropics, by analyzing 201 PDDs from adaptation funds, mitigation instruments, and project standards [e.g., climate community and biodiversity (CCB)]. We analyzed whether PDDs established for one goal reported an explicit contribution to the other (i.e., whether mitigation PDDs contributed to adaptation and vice versa). We also examined whether the
proposed activities or expected outcomes allowed for potential contributions to the two goals. Despite the separation between the two goals in international and national institutions, 37% of the PDDs explicitly mentioned a contribution to the other objective, although only half of those substantiated it. In addition, most adaptation (90%) and all mitigation PDDs could potentially report a contribution to at least partially to the other goal. Some adaptation project developers were interested in mitigation for the prospect of carbon funding, whereas mitigation project developers integrated adaptation to achieve greater long-term sustainability or to attain CCB certification. International and national institutions can provide incentives for projects to harness synergies and avoid trade-offs between adaptation and mitigation.

**General information**

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Scopus rating (2014): SJR 0.862 SNIP 1.015 CiteScore 1.94  
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Scopus rating (2003): SJR 0.603 SNIP 1.147  
Scopus rating (2002): SJR 0.638 SNIP 1.078  
Scopus rating (2001): SJR 0.743 SNIP 1.09
Advancing absolute sustainability assessments of products with a new Planetary Boundaries based life-cycle impact assessment methodology

The Planetary Boundaries (PB)-framework introduced quantitative boundaries for a set of biophysical Earth System processes. The PBs delimit a ‘safe operating space’ for humanity to act within to keep Earth in a Holocene-like state (Rockström et al 2009). The concept has gained strong interest from companies that want to assess and communicate the environmental sustainability of their products relative to the PBs. However, consistent methods for assessing environmental impacts of products and systems based on the PBs have, to date, not been developed (Ryberg et al 2016).

In this study, we developed an operational life-cycle impact assessment (LCIA) methodology where the definition of the impact categories is based on the control variables as defined in the PB-framework by Steffen et al (2015). This included the development and calculation of characterization factors for the Earth System processes considered in the PB-framework. The characterization factors cover environmental flows contributing to impacts on the Earth System processes (e.g. CO2 and its precursors contributing to ocean acidification) and are expressed in the units of the PB framework’s control variables (e.g. change in the aragonite saturation state per unit CO2 emission for ocean acidification). The use of these characterization factors for evaluating the environmental impacts of products in LCA ensures impact scores that are compatible with the PB framework. The impact scores can be related to either the full PBs or an allocated safe operating space. The latter reflect the share of the safe operating space the assessed products can be considered entitled to, thereby, allowing for quantifying the absolute environmental sustainability of the products.

This new Planetary Boundaries based LCIA methodology provides additional and complementary insights which cannot be achieved with traditional LCIA methodologies. The key added value is the ability to relate the impacts of a product to the Planetary Boundaries. This can be used for communicating a product’s environmental performance and for setting reduction targets based on absolute environmental boundaries, thereby, advancing absolute sustainability assessments.

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A flexible matrix-based human exposure assessment framework suitable for LCA and CAA
Humans can be exposed to chemicals via near-field exposure pathways (e.g. through consumer product use) and far-field exposure pathways (e.g. through environmental emissions along product life cycles). Pathways are often complex where chemicals can transfer directly from products to humans during use or exchange between near-and far-field compartments until sub -fractions reach humans via inhalation, ingestion or dermal uptake. Currently, however, multimedia exposure models mainly focus on far-field exposure pathways. Metrics and modeling approaches used in far-field, emission-based models are not applicable to all types of near-field chemical releases from consumer products, e.g. direct dermal application. A consistent near-and far-field framework is needed for life cycle assessment (LCA) and chemical alternative assessment (CAA) to inform mitigation of human exposure to harmful chemicals. To close the current research gaps, we (i) define a near-and far-field matrix-based exposure pathways framework that builds on a quantitative metric based on chemical mass in products, (ii) rovide input data for the framework, e.g. chemical concentrations in products linked to functional use categories, and (iii) propose a consistent set of underlying models to populate the matrix-based framework for all relevant multime dia transfers and exposure pathways. Output is a flexible mass balance-based model structuring
multimedia transfers in a matrix of first-order inter-compartmental transfer fractions. Inverting this matrix yields cumulative multimedia transfer fractions and exposure pathway-specific Product Intake Fractions defined as chemical mass taken in by humans per unit mass of chemical in a product. When the chemical mass in products is unavailable from individual studies and databases, it can be estimated from chemical-product function relationships or regulatory frame formulations. Combining Product Intake Fractions with chemical masses in products yields exposure estimates per unit mass compatible with LCA and CAA. We demonstrate how this matrix-based modeling system offers a consistent and efficient way to compare exposure pathways for different user groups (e.g. children and adults) and the general population exposed via the environment associated with product use. Our framework constitutes a user-friendly approach to test and interpret multiple human exposure scenarios in a coupled system of near-and far-field pathways and helps to understand the contribution of individual pathways to overall human exposure in various product application contexts. When combined with toxicity information this approach is a resourceful way to inform LCA and CAA and minimize human exposure to toxic chemicals in consumer products through both product use and environmental emissions.

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Age and attitude: Changes in cycling patterns of different e-bike user segments
The use and purchase of electric bicycles (e-bikes) is emerging in many countries. Existing knowledge about changes in cycling patterns and car replacement after gaining e-bike access is limited and partly contradictory. Based on an online survey among e-bike users in Denmark (N = 427), this study looked into these effects by differentiating between different segments of e-bike users. We distinguished four age groups as well as three segments based on cycling attitudes and motives for the use and purchase of e-bikes: (1) enthusiastic e-bikers who showed the most positive attitudes towards e-bikes and mainly bought an e-bike to increase cycling frequency; (2) utilitarian e-bikers who already cycled regularly before having access to an e-bike and used the e-bike particularly for practical purposes and to reduce travel time; (3) recreational e-bikers who were very positive about e-bike use but used it less regularly and mainly for long-distance recreational trips. Enthusiastic e-bikers reported the highest increase in overall cycling. Half of the enthusiastic e-bikers agreed that they bought the e-bike to replace a car. Differences between the four age groups were less pronounced. Nevertheless, we found that e-bike access decreased age differences in self-reported cycling frequency, whereas it increased differences in self-reported distances. Measures to increase e-bike use should primarily focus on potential enthusiastic e-bikers. Possible interventions include promotional campaigns at workplaces, intended to address not only
A GRASP algorithm for the container stowage slot planning problem

This work presents a generalization of the Slot Planning Problem which raises when the liner shipping industry needs to plan the placement of containers within a vessel (stowage planning). State-of-the-art stowage planning relies on a heuristic decomposition where containers are first distributed in clusters along the vessel. For each of those clusters a specific position for each container must be found. Compared to previous studies, we have introduced two new features: the explicit handling of rolled out containers and the inclusion of separations rules for dangerous cargo. We present a
novel integer programming formulation and a Greedy Randomized Adaptive Search Procedure (GRASP) to solve the problem. The approach is able to find high-quality solution within 1 s. We also provide comparison with the state-of-the-art on an existing and a new set of benchmark instances. (C) 2016 Elsevier Ltd. All rights reserved.
A heuristic and hybrid method for the tank allocation problem in maritime bulk shipping

In bulk shipping, ships often have multiple tanks and carry multiple inhomogeneous products at a time. When operating such ships it is therefore a major challenge to decide how to best allocate cargoes to available tanks while taking into account tank capacity, safety restrictions, ship stability and strength as well as other operational constraints. The problem of finding a feasible solution to this tank allocation problem has been shown to be NP-Complete. We approach the problem on a tactical level where requirements for computation time are strict while solution quality is less important than simply finding a feasible solution. We have developed a heuristic that can efficiently find feasible cargo allocations. Computational results show that it can solve 99% of the considered instances within 0.4 s and all of them if allowed longer time. We have also modified an optimality based method from the literature. The heuristic is much faster than this modified method on the vast majority of considered instances. However, the heuristic struggles on two instances which are relatively quickly solved by the modified optimality based method. These two methods therefore complement each other nicely and so, we have created a hybrid method that first runs the heuristic and if the heuristic fails to solve the problem, then runs the modified optimality based method on the parts of the problem that the heuristic did not solve. This hybrid method cuts between 90 and 94% of the average running times compared to the other methods and consistently solves more instances than the other methods within any given time limit. In fact, this hybrid method is fast enough to be used in a tactical setting.
A hybrid ICT-solution for smart meter data analytics

Smart meters are increasingly used worldwide. Smart meters are the advanced meters capable of measuring energy consumption at a fine-grained time interval, e.g., every 15 min. Smart meter data are typically bundled with social economic data in analytics, such as meter geographic locations, weather conditions and user information, which makes the data sets very sizable and the analytics complex. Data mining and emerging cloud computing technologies make collecting, processing, and analyzing the so-called big data possible. This paper proposes an innovative ICT-solution to streamline smart meter data analytics. The proposed solution offers an information integration pipeline for ingesting data from smart meters, a scalable platform for processing and mining big data sets, and a web portal for visualizing analytics results. The implemented system has a hybrid architecture of using Spark or Hive for big data processing, and using the machine learning toolkit, MADlib, for doing in-database data analytics in PostgreSQL database. This paper evaluates the key technologies of the proposed ICT-solution, and the results show the effectiveness and efficiency of using the system for both batch and online analytics.
Airbags til cyklister

En cykelhjelms størrelse og tykkelse er afgørende for dens evne til at dæmpe det stød som cyklister udsættes for i forbindelse med styrt og/eller kollision. Både praktisk og æstetisk er der dog grænser for, hvor stor en hjelm cyklister vil cykle rundt med. En gruppe amerikanske forskere har testet en ny type cykelhjelm, der udvider sig i forbindelse med styrt/kollision. Forskerne konkluderer, at den nye hjelmtype har potentiale til god beskyttelse mod hovedskader, men at der er behov en omfattende forskningsindsats før der kan konkluderes endeligt vedrørende den trafiksikkerhedsmæssige effekt.

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Authors: Kolisch, R. (Ekstern), Brunner, J. O. (Ekstern), Larsen, J. (Intern)
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Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.823 SNIP 2.82 CiteScore 3.36
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.472 SNIP 2.495 CiteScore 3.05
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.449 SNIP 2.489
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.386 SNIP 2.405
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 2.246 SNIP 2.325
Web of Science (2008): Indexed yes
A life cycle assessment framework combining nutritional and environmental health impacts of diet: a case study on milk

Purpose While there has been considerable effort to understand the environmental impact of a food or diet, nutritional effects are not usually included in food-related life cycle assessment (LCA).

Methods We developed a novel Combined Nutritional and Environmental Life Cycle Assessment (CONE-LCA) framework that evaluates and compares in parallel the environmental and nutritional effects of foods or diets. We applied this framework to assess human health impacts, expressed in Disability Adjusted Life Years (DALYs), in a proof-of-concept case study that investigated the environmental and nutritional human health effects associated with the addition of one serving of fluid milk to the present average adult US diet. Epidemiology-based nutritional impacts and benefits linked to milk intake, such as colorectal cancer, stroke, and prostate cancer, were compared to selected environmental impacts traditionally considered in LCA (global warming and particulate matter) carried to a human health endpoint.

Results and discussion Considering potential human health effects related to global warming, particulate matter, and nutrition, within the context of this study, findings suggest that adding one serving of milk to the current average diet could result in a health benefit for American adults, assuming that existing foods associated with substantial health benefits are not substituted, such as fruits and vegetables. The net health benefit is further increased when considering an iso-caloric substitution of less healthy foods (sugar-sweetened beverages). Further studies are needed to test whether this conclusion holds within a more comprehensive assessment of environmental and nutritional health impacts.

Conclusions This case study provides the first quantitative epidemiology-based estimate of the complements and trade-offs between nutrition and environment human health burden expressed in DALYs, pioneering the infancy of a new approach in LCA. We recommend further testing of this CONE-LCA approach for other food items and diets, especially when making recommendations about sustainable diets and food choices.
A life-cycle assessment of poly-hydroxybutyrate extraction from microbial biomass using dimethylcarbonate

Plastic materials have wide commercial applicability. However, they are made from non-renewable resources and are characterised by resistance to degradation. Poly-hydroxyalkanoates (PHAs) provides one example of a polymer biodegradable, biocompatible and produced from renewable raw materials. With respect to other bioplastics the share of PHAs in the market is very limited because of their commercial costs. To develop more cost effective processes for PHAs...
production, a multilevel approach is usually undertaken combining innovative, cheaper and more effective cultivation with safe and cheap extraction and purification methodologies. This study assesses the potential environmental impacts related to a production processes based on the novel protocol to extract PHAs comparing them to the impacts of extraction process based on the use of halogenated hydrocarbons.

**General information**
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Bologna
Authors: Righi, S. (Ekstern), Baioli, F. (Ekstern), Samorì, C. (Ekstern), Galletti, P. (Ekstern), Stramigioli, C. (Ekstern), Tugnoli, A. (Ekstern), Fantke, P. (Intern)
Number of pages: 11
Publication date: 2016

**Host publication information**
Title of host publication: 10th Italian LCA Conference: 10th Convegno dell'Associazione Rete Italiana LCA 2016
Main Research Area: Technical/natural sciences
Conference: 10th Italian LCA Conference, Ravenna, Italy, 23/06/2016 - 23/06/2016
Electronic versions:
Righi_2016a.pdf
Source: PublicationPreSubmission
Source-ID: 126891660
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

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Almost like being there: the Power of Personas when designing for foreign Cultures

Much research on personas focuses on how to develop and use personas, less on the validation and concrete value of them in the development of products for cultures far away from the actual design site. This article illustrates how such a validation was accomplished through producing a film and it provides an in-depth case description of how personas were developed and used. When designing a waste management system for soft plastic for a small village in India, personas were developed and applied by the designer to maintain a user-oriented focus throughout the participatory design process. During a three-month stay in the village, personas based on real people and the villagers’ everyday life and practices were developed by getting to know people and their ways of life through the use of ethnographic methods (observations, interviews, workshops and a film). The personas created a substantial understanding of the users’ individual needs, interests, values and emotions and helped to overcome the physical and cultural distance, enabling a strongly contextualised design.

**General information**
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Department of Mechanical Engineering, Engineering Design and Product Development, Technical University of Denmark
Authors: Vestergaard, L. (Ekstern), Hauge, B. (Intern), Hansen, C. T. (Intern)
Number of pages: 18
Pages: 257-274
Publication date: 2016
Main Research Area: Technical/natural sciences

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Journal: CoDesign
Volume: 12
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ISSN (Print): 1571-0882
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 0.362 SNIP 1.63 CiteScore 2.29
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.476 SNIP 1.164 CiteScore 1.45
BFI (2014): BFI-level 2
Alternative learning environments by alternative retrofitting processes

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Tampere University of Technology, Aalto University, Norwegian University of Science and Technology, Chalmers University of Technology
Authors: Nenonen, S. (Ekstern), Eriksson, R. (Ekstern), Niemi, O. (Ekstern), Junghans, A. (Ekstern), Nielsen, S. B. (Intern), Lindahl, G. (Ekstern)
Number of pages: 11
Publication date: 2016

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Title of host publication: Proceedings of CFM's Second Nordic Conference: Facilities Management Research and Practice
Does FM Contribute to Happiness in Nordic Countries?
Publisher: Polyteknisk Boghandel og Forlag
Editor: Anker Jensen, P.
ISBN (Electronic): 9788750211044
Main Research Area: Technical/natural sciences
Electronic versions: Nenonen_et_al_2016
Nenonen_et_al_2016.pdf
Source: PublicationPreSubmission
Source-ID: 125635091
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

Alternatives for Future Waste Management in Denmark: Final Report of TopWaste
The TOPWASTE project has addressed the challenges of planning robust solutions for future waste management. The purpose was to identify economic and environmentally optimal solutions - taking into account different scenarios for the development of the surrounding systems, such as the energy system. During the project, four decision support tools were developed:1. Frida - The EPA's tool for forecasting future waste generation 2. OptiWaste - a new tool for economic optimisation of investments and operation of the combined waste and energy system 3. KISS - a new lifecycle based model with focus on comparison of greenhouse gas emissions associated with different waste management alternatives 4. A new tool for techno-economic modelling of central sorting plants. The project has furthermore contributed with method development on evaluation of critical resources as well as analyses of economic and organisational factors with influence on the future waste management. The results of the project clearly show the importance of taking scenarios for the future development of surrounding systems into account when deciding how the future waste management should be, both when it comes to the economic, environmental and resource efficiency of waste management solutions. The following chapters addresses these issues by answering some of the main research questions of the project.
A Matheuristic Approach to Integrate Humping and Pullout Sequencing Operations at Railroad Hump Yards

This article presents a novel matheuristic for solving the hump yard block-to-track assignment problem. This is an important problem arising in the railway freight industry and involves scheduling the transitions of a set of rail cars from a set of inbound trains to a set of outbound trains over a certain planning horizon. It was also the topic of the 2014 challenge organized by the Railway Applications Section of the Institute for Operations Research and the Management Sciences for which the proposed matheuristic was awarded first prize. Our approach decomposes the problem into three highly dependent subproblems. Optimization-based strategies are adopted for two of these, while the third is solved using a greedy heuristic. We demonstrate the efficiency of the complete framework on the official datasets, where solutions within 4–14% of a known lower bound (to a relaxed problem) are found. We further show that improvements of around 8% can be achieved if outbound trains are allowed to be delayed by up to 2 h in the hope of ensuring an earlier connection for some of the rail cars. © 2015 Wiley Periodicals, Inc.
A Matheuristic for the Cargo Mix Problem

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Transport DTU
Authors: Christensen, J. M. (Intern), Pacino, D. (Intern)
Publication date: 2016
Event: Paper presented at 9th Triennial Symposium on Transportation Analysis, Oranjestad, Aruba.
Main Research Area: Technical/natural sciences

A Maturity Grid Assessment Tool for Environmentally Conscious Design in the Medical Device Industry

The medical device industry is growing increasingly concerned about environmental impact of products. Whilst there are many tools aiming to support environmentally conscious design, they are typically complex to use, demand substantial data collection and are not tailored to the specific needs of the medical device sector. This paper reports on the development of a Maturity Grid to address this gap. This novel design tool was developed iteratively through application in five case studies. The tool captures principles of eco-design for medical devices in a simple form, designed to be used by
a team. This intervention tool provides designers and product marketers with insights on how to improve the design of their medical devices and specifically allows consideration of the complex trade-offs between decisions that influence different life-cycle stages. Through the tool, actionable insight is created that supports decisions to be made within the realm of design engineers and beyond. The tool highlights areas which are influenced by design decisions taken, some of which are perceived to be outside of the direct control of designers.

**General information**
State: Published
Organisations: Department of Management Engineering, Engineering Systems, University of Cambridge
Authors: Moultrie, J. (Ekstern), Sutcliffe, L. F. R. (Ekstern), Maier, A. (Intern)
Pages: 252–265
Publication date: 2016
Main Research Area: Technical/natural sciences

**Publication information**
Journal: Journal of Cleaner Production
Volume: 122
ISSN (Print): 0959-6526
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.83 SJR 1.615 SNIP 2.382
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.609 SNIP 2.383 CiteScore 5.57
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.706 SNIP 2.328 CiteScore 4.07
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.461 SNIP 1.825 CiteScore 3.19
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.419 SNIP 1.742
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.942 SNIP 1.544
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.813 SNIP 1.354
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.942 SNIP 1.489
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.842 SNIP 1.543
Scopus rating (2005): SJR 0.544 SNIP 1.357
Scopus rating (2004): SJR 0.753 SNIP 1.818
A method for aggregating external operating conditions in multi-generation system optimization models

This paper presents a novel, simple method for reducing external operating condition datasets to be used in multi-generation system optimization models. The method, called the Characteristic Operating Pattern (CHOP) method, is a visually-based aggregation method that clusters reference data based on parameter values rather than time of occurrence, thereby preserving important information on short-term relations between the relevant operating parameters. This is opposed to commonly used methods where data are averaged over chronological periods (months or years), and extreme conditions are hidden in the averaged values. The CHOP method is tested in a case study where the operation of a fictive Danish combined heat and power plant is optimized over a historical 5-year period. The optimization model is solved using the full external operating condition dataset, a reduced dataset obtained using the CHOP method, a monthly-averaged dataset, a yearly-averaged dataset, and a seasonal peak/off-peak averaged dataset. The economic result obtained using the CHOP-reduced dataset is significantly more accurate than that obtained using any of the other reduced datasets, while the calculation time is similar to those obtained using the monthly averaged and seasonal peak/off-peak averaged datasets. The outcomes of the study suggest that the CHOP method is advantageous compared to chronology-averaging methods in reducing external operating condition datasets to be used in the design optimization models of flexible multi-generation systems.

General information
State: Published
Organisations: Department of Mechanical Engineering, Thermal Energy, Department of Management Engineering, Ecole Polytechnique Federale de Lausanne (EPFL)
Authors: Lythcke-Jørgensen, C. E. (Intern), Münster, M. (Intern), Ensinas, A. V. (Ekstern), Haglind, F. (Intern)
Pages: 59-75
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication Information
Journal: Applied Energy
Volume: 166
ISSN (Print): 0306-2619
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 7.78 SJR 3.058 SNIP 2.573
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.912 SNIP 2.61 CiteScore 6.4
A method for Effect Modifier Assessment in ergonomic intervention research – The EMA method

Introduction:
Ergonomic intervention research includes studies in which researchers arrange (or follow) changes in working conditions to determine the effects in risk factors and/or health. Often this research takes place at workplaces and not in a controlled environment of a laboratory. The effects may thus be due to other factors in addition to the investigated intervention – i.e. due to effect modifiers. Such effect modifiers need to be identified and assessed in terms of potential impact on the investigated outcome before proper inference can be drawn. A preliminary review of the literature revealed lack of or poor consideration of effect modifiers in ergonomic intervention research. We present a method that has been developed over the course of several years parallel to intervention studies in healthcare.
Material and methods:
The EMA method is a type of group interview including 3-6 employees representing the occupational groups in the investigated organization. With reference to the investigated period they are asked to recall important changes/events in and around the ward; 1) in general, 2) in work processes and equipment and 3) regarding their work environment. In each step the participants write their individual answer on post-it notes. The answers are then discussed in plenum, one at a time, and the post-it note is placed on a timeline. At the end this illustrates the sequence of significant events. All identified events are assessed for being caused by either the investigated intervention(s) or other causes (“the effect modifiers”) and their impact on the work environment. Following the workshop, events are entered into a database and reassessed by triangulation based on scientific evidence, researcher knowledge, reading the transcribed audio recorded workshop and other local sources.

Conclusion:
The EMA method seems to offer a feasible procedure to obtain significant knowledge on potential effect modifiers in ergonomic intervention research. However, further development and validation is suggested.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, University of Gothenburg
Authors: Edwards, K. (Intern), Winkel, J. (Intern)
Publication date: 2016

Host publication information
Title of host publication: Sustainable healthcare through professional collaboration across boundaries.
Main Research Area: Technical/natural sciences
Electronic versions:
A_method_for_Effect_Modifier_Assessment_in_ergonomic_intervention_research_The_EMA_method.pdf
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2016

A methodology for designing flexible multi-generation systems
An FMG (flexible multi-generation system) consists of integrated and flexibly operated facilities that provide multiple links between the various layers of the energy system. FMGs may facilitate integration and balancing of fluctuating renewable energy sources in the energy system in a cost- and energy-efficient way, thereby playing an important part in smart energy systems. The development of efficient FMGs requires systematic optimization approaches. This study presents a novel, generic methodology for designing FMGs that facilitates quick and reliable pre-feasibility analyses. The methodology is based on consideration of the following points: Selection, location and dimensioning of processes; systematic heat and mass integration; flexible operation optimization with respect to both short-term market fluctuations and long-term energy system development; global sensitivity and uncertainty analysis; biomass supply chains; variable part-load performance; and multi-objective optimization considering economic and environmental performance. Tested in a case study, the methodology is proved effective in screening the solution space for efficient FMG designs, in assessing the importance of parameter uncertainties and in estimating the likely performance variability for promising designs. The results of the case study emphasize the importance of considering systematic process integration when developing smart energy systems.

General information
State: Published
Organisations: Department of Mechanical Engineering, Thermal Energy, Department of Management Engineering, Ecole Polytechnique Federale de Lausanne (EPFL)
Authors: Lythcke-Jørgensen, C. E. (Intern), Viana Ensinas, A. (Ekstern), Münster, M. (Intern), Haglind, F. (Intern)
Pages: 34–54
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: Energy
Volume: 110
ISSN (Print): 0360-5442
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
A methodology to measure the effectiveness of academic recruitment and turnover

We propose a method to measure the effectiveness of the recruitment and turnover of professors, in terms of their research performance. The method presented is applied to the case of Italian universities over the period 2008–2012. The work then analyses the correlation between the indicators of effectiveness used, and between the indicators and the
universities' overall research performance. In countries that conduct regular national assessment exercises, the evaluation of effectiveness in recruitment and turnover could complement the overall research assessments. In particular, monitoring such parameters could assist in deterring favoritism, in countries exposed to such practices.© 2015 Elsevier Ltd. All rights reserved.

A model of designing as the intersection between uncertainty perception, information processing, and coevolution
A number of fundamental perspectives on designing have been described in the literature, in particular problem/solution coevolution and information use. However, these different perspectives have to-date been modelled separately, making
This paper addresses the Electric Vehicle Scheduling Problem (E-VSP), which is a set of timetabled bus trips, each starting from and ending at specific locations and at specific times, should be carried out by a set of electric buses or vehicles based at a number of depots with limited driving ranges. The electric vehicles are allowed to be recharged fully or partially at any of the given recharging stations. The objective is to firstly minimize the number of vehicles needed to cover all the timetabled trips, and secondly to minimize the total traveling distance, which is equivalent to minimizing the total deadheading distance. A mixed integer programming formulation as well as an Adaptive Large Neighborhood Search (ALNS) heuristic for the E-VSP are presented. ALNS is tested on newly generated E-VSP benchmark instances. Result shows that the proposed heuristic can provide good solutions to large E-VSP instances and optimal or near-optimal solutions to small E-VSP instances.
An adaptive large neighborhood search procedure applied to the dynamic patient admission scheduling problem

General information
State: Published
Organisations: Department of Management Engineering, Management Science, AMCS Denmark A/S, Hospital of South West Jutland
Authors: Lusby, R. M. (Intern), Schwierz, M. (Ekstern), Range, T. M. (Ekstern), Larsen, J. (Intern)
Pages: 21-31
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: Artificial Intelligence in Medicine
Volume: 74
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Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 0.635 SNIP 1.192 CiteScore 2.65
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.791 SNIP 1.833 CiteScore 3.04
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.783 SNIP 1.953 CiteScore 2.83
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.722 SNIP 1.706 CiteScore 2.57
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.612 SNIP 1.496 CiteScore 2.3
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.54 SNIP 1.515 CiteScore 2.29
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.633 SNIP 1.34
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.748 SNIP 1.897
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.017 SNIP 2.103
Scopus rating (2007): SJR 1.021 SNIP 2.391
Scopus rating (2006): SJR 0.76 SNIP 2.064
Scopus rating (2005): SJR 0.712 SNIP 2.132
Scopus rating (2004): SJR 0.52 SNIP 1.81
Analysis of national Jatropha biodiesel programme in Senegal
Growing Jatropha curcas for energy applications has been established through several initiatives in Senegal. The government of Senegal launched the National Jatropha Programme (NJP) in 2006 with the goal of planting 321,000 ha of Jatropha curcas, with an average of 1000 hectares (ha) in each rural locality. This paper reviews existing policies with relevance to Jatropha curcas L production in Senegal. It assesses the NJP implementation, identifies potential gaps and provides recommendations with regards to planning, institutional management, regulation, and implementation. The potential of Jatropha and other biodiesel crop options, based on findings from an agro-environmental mapping exercise have been shown. Findings show that prior policies in agricultural and energy sectors had been instrumental in developing the NJP. It highlights significant challenges in the value chain, the implementation of NJP and on the importance of using empirical assessment of evidence to inform on the biodiesel crop type compared to a focus on only one crop, Jatropha. Agro-environmental mapping was identified as useful technique prior to biodiesel cultivation. The work reported here indicates Jatropha having the largest suitability of land areas equating to almost thirty times (30) the original estimations in the NJP followed by Pongamia and sunflower with 6,796,000 ha and 5,298,900 ha respectively. Recommendations are provided suggesting, scientifically sound analysis from agro-environmental mapping to inform on the suitability of areas for Jatropha cultivation and on environmentally, socially and culturally sensitive areas. Policy options have been suggested for environmentally benigned sustained biodiesel activities in Senegal.

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, ENDA—Energy, Environment, Development
Authors: Dafrallah, T. (Ekstern), Ackom, E. (Intern)
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Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: A I M S Energy
Volume: 4
Issue number: 4
ISSN (Print): 2333-8326
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Web of Science (2018): Indexed yes
Web of Science (2017): Indexed yes
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Original language: English
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Electronic versions:
Touria_Accom_Senegal_Jatropha_Paper.pdf
DOIs:
10.3934/energy.2016.4.589
Source: PublicationPreSubmission
Source-ID: 125033996
Publication: Research - peer-review › Journal article – Annual report year: 2016
Analysis of regulation and economic incentives of the hybrid CSP HYSOL
The European HYSOL project, developed over the last three years in the solar thermal plant Manchasol (Ciudad Real, Spain), has been successfully completed, demonstrating that hybridisation of CSP with other energy sources (renewable and fossil) ensures power supply to the power grid in a stable and firm way, regardless the weather conditions.

General information
State: Published
Organisations: Department of Management Engineering, Energy Economics and Regulation
Authors: Baldini, M. (Intern), Pérez, C. H. C. (Intern)
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Projects:

Analysis of regulation and economic incentives of the hybrid CSP HYSOL
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Publication: Research - peer-review › Report – Annual report year: 2016

Analysis of visual representation techniques for product configuration systems in industrial companies
In recent years, there has been an increasing demand for customized products. Product configuration systems (PCS) are introduced as one of the most successful systems of artificial intelligent for providing customized products. One of the main challenges in PCSs projects are described in relation with knowledge representations and communications with domain experts. The results presented in the paper are therefore aimed to provide insight into the impact from using visual knowledge representations techniques in PCSs projects. The findings indicate that use of visual knowledge representations techniques in PCSs projects will result in improved quality of maintenance and development support for the knowledge base and improved quality of the communication with domain experts.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Graz University of Technology
Authors: Shafiee, S. (Intern), Kristjansdottir, K. (Intern), Hvam, L. (Intern), Felfernig, A. (Ekstern), Myrodia, A. (Intern)
Pages: 793-797
Publication date: 2016

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Title of host publication: 2016 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)
Publisher: IEEE
Main Research Area: Technical/natural sciences
Knowledge representation, Visualization, Companies, Maintenance engineering, Unified modeling language, Knowledge based systems, Object oriented modeling, product modelling, Product configuration system (PCS), visual knowledge representation techniques
DOIs: 10.1109/IEEM.2016.7797985
Source: FindIt
Source-ID: 2350314062
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

An analysis of vendor innovation capability in the contract electronics manufacturing industry
Limited academic research has been given to analysing the innovation capabilities of vendors in outsourcing contracts. This paper seeks to address this gap in the literature by enhancing our understanding of how the innovation capability of vendors is deployed to win, run and renew outsourcing contracts with their customers. Employing the resource-based view as a theoretical basis and undertaking in-depth case study analysis of three vendors in the electronic manufacturing
services industry, the research shows that to achieve the outsourcing objectives of winning, running and renewing the
contract, vendors can use different configurations of the competitive priorities of cost, quality, delivery and flexibility. The
research aggregates the capabilities that influence the innovative capability of a vendor into the innovation-related
capabilities (IRCs) of design, new product introduction and manufacturing. Three strategies are identified for vendors on
how to deploy these IRCs, and a number of propositions are developed to indicate the suitability of the three deployment
strategies for different operational contexts.

**General information**

State: Published
Organisations: Department of Management Engineering, DTU Executive School of Business, University of San Francisco,
University of Ulster
Authors: Perunovic, Z. (Intern), Mefford, R. (Ekstern), Christoffersen, M. (Intern), McIvor, R. (Ekstern), Falls, D. (Ekstern)
Number of pages: 13
Pages: 797-809
Publication date: 2016
Main Research Area: Technical/natural sciences

**Publication information**

Journal: Production Planning & Control
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ISSN (Print): 0953-7287
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.45 SJR 1.073 SNIP 1.226
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.127 SNIP 1.252 CiteScore 2.23
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.009 SNIP 1.349 CiteScore 1.95
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.658 SNIP 1.122 CiteScore 1.29
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.669 SNIP 0.89 CiteScore 1.21
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.543 SNIP 0.67 CiteScore 0.87
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.509 SNIP 0.685
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.546 SNIP 0.743
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.633 SNIP 0.868
Scopus rating (2007): SJR 0.701 SNIP 0.885
Scopus rating (2006): SJR 0.542 SNIP 0.836
Scopus rating (2005): SJR 0.579 SNIP 0.936
Scopus rating (2004): SJR 0.631 SNIP 1.085
Scopus rating (2003): SJR 0.647 SNIP 1.022
An applied optimization based method for line planning to minimize travel time

The line planning problem in rail is to select a number of lines from a potential pool which provides sufficient passenger capacity and meets operational requirements, with some objective measure of solution line quality. We model the problem of minimizing the average passenger system time, including frequency-dependent estimates for switching between lines, working with the Danish rail operator DSB and data for Copenhagen commuters. We present a multi-commodity flow formulation for the problem of freely routing passengers, coupled to discrete line-frequency decisions selecting lines from a predefined pool. We show results directly applying this model to a Copenhagen commuter rail problem.

A new approach to the Container Positioning Problem

In this paper the Container Positioning Problem is revisited. This problem arises at busy container terminals and requires one to minimize the use of block cranes in handling the containers that must wait at the terminal until their next means of transportation. We propose a new Mixed Integer Programming model that not only improves on earlier attempts at this problem, but also better reflects reality. In particular, the proposed model adopts a preference to reshuffle containers in line with a just-in-time concept, as it is assumed that data is more accurate the closer to a container’s scheduled departure the time is. Other important improvements include reduction in the model size, and the ability of the model to consider containers initially at the terminal. In addition, we describe several classes of valid inequalities for this new formulation and present a rolling horizon based heuristic for solving larger instances of the problem. We show that this new formulation drastically outperforms previous attempts at the problem through a direct comparison on instances available in the literature. Furthermore, we also show that the rolling horizon based heuristic can further reduce the solution time on the larger of these instances as well as find acceptable solutions to much bigger, artificially generated, instances.
An Exploratory Study of Crises in Product Development

In April 2010, the Deepwater Horizon oil rig exploded in the Gulf of Mexico. The explosion killed 11 workers. In order to stop the oil outflow, the workers attempted to activate the blowout preventer, which failed. As a consequence, more than
An integrated micro-macro approach to robust railway timetabling

With the increasing demand for railway transportation infrastructure managers need improved automatic timetabling tools that provide feasible timetables with enhanced performance in short computation times. This paper proposes a hierarchical framework for timetable design which combines a microscopic and a macroscopic model of the network. The framework performs an iterative adjustment of train running and minimum headway times until a feasible and stable timetable has been generated at the microscopic level. The macroscopic model optimizes a trade-off between minimal travel times and maximal robustness using an Integer Linear Programming formulation which includes a measure for delay recovery computed by an integrated delay propagation model in a Monte Carlo setting. The application to an area of the Dutch railway network shows the ability of the approach to automatically compute a feasible, stable and robust timetable. Practitioners can use this approach both for effective timetabling and post-evaluation of existing timetables.
An Introduction to Experimental Design Research

Design research brings together influences from the whole gamut of social, psychological, and more technical sciences to create a tradition of empirical study stretching back over 50 years (Horvath 2004; Cross 2007). A growing part of this empirical tradition is experimental, which has gained in importance as the field has matured. As in other evolving disciplines, e.g. behavioural psychology, this maturation brings with it ever-greater scientific and methodological demands (Reiser 1939; Dorst 2008). In particular, the experimental paradigm holds distinct and significant challenges for the modern design researcher. Thus, this book brings together leading researchers from across design research in order to provide the reader with a foundation in experimental design research; an appreciation of possible experimental perspectives; and insight into how experiments can be used to build robust and significant scientific knowledge. This chapter sets the stage for these discussions by introducing experimental design research, outlining the various types of experimental approach, and explaining the role of this book in the wider methodological context.

Application of Lean Manufacturing in Hospitals-the Need to Consider Maturity, Complexity, and the Value Concept

Lean is widely applied in hospitals, but the impact tends to be limited. This paper investigates three possible explanations: 1) maturity, 2) complexity, and 3) the value concept and analyses the bearing of these in a case study of lean application in a large Danish university hospital. The results indicate that lean tends to be applied in secondary and support functions with a logistic character and therefore has had a limited impact on the overall healthcare performance. The case study shows that there are constraints related to low lean maturity, the complexity of processes and operations as well as differences in value perceptions among the different professions (e.g., doctors, nurses, and managers) within the hospital. The conclusion is that lean is useful for hospitals, but the lean concept as well as its implementation methods need to be fitted to the organizational complexity and diverging values in hospitals in order to bring about a larger impact. It is therefore necessary to develop new models for the lean concept as well as the implementation of lean adapted to the particular context of hospitals with a stronger focus on patient experiences and on coordination of social relations.
Application of PestLCI model to site-specific soil and climate conditions: the case of maize production in Northern Italy

The calculation of emissions from the use of pesticides is a critical issue in LCA studies of agrifood products and only occasionally discussed in details in literature studies. The objective of this study is to assess the results of the application of PestLCI 2.0 model to the production of maize in Northern Italy using site-specific soil and climate data, which were added for this purpose in PestLCI database. In this way, the application of the tool and its database were tailored to that area. Moreover, the results were compared with those obtained assuming maize cultivation on other soil typologies in the surrounding areas. Results show that soil variation scarcely affects the emissions to air and surface water whereas it affects significantly the emissions to groundwater. Finally, some features of PestLCI were highlighted and comments for a further improvement of the model were provided.

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Approaches to formalization of the informal waste sector into municipal solid waste management systems in low- and middle-income countries: Review of barriers and success factors

The Municipal Solid Waste Management (MSWM) sector represents a major challenge for low-and middle-income countries due to significant environmental and socioeconomic issues involving rapid urbanization, their MSWM systems, and the existence of the informal waste sector. Recognizing its role, several countries have implemented various formalization measures, aiming to address the social problems linked to this sector. However, regardless of these initiatives, not all attempts at formalization have proved successful due to the existence of barriers preventing their implementation in the long term. Along with this, there is a frequent lack of knowledge or understanding regarding these barriers and the kind of measures that may enable formalization, thereby attaining a win-win situation for all the stakeholders involved. In this context, policy- and decision-makers in the public and private sectors are frequently confronted with the dilemma of finding workable approaches to formalization, adjusted to their particular MSWM contexts. Building on the review of frequently implemented approaches to formalization, including an analysis of the barriers to and enabling measures for formalization, this paper aims to address this gap by explaining to policy- and decision-makers, and to waste managers in the private sector, certain dynamics that can be observed and that should be taken into account when designing formalization strategies that are adapted to their particular socioeconomic and political-institutional context. This includes possible links between formalization approaches and barriers, the kinds of barriers that need to be removed, and enabling measures leading to successful formalization in the long term. This paper involved a literature review of common approaches to formalization, which were classified into three categories: (1) informal waste workers organized in associations or cooperatives; (2) organized in CBOs or MSEs; and (3) contracted as individual workers by the formal waste sector. This was followed by the identification and subsequent classification of measures for removing common barriers to formalization into five categories: policy/legal, institutional/organizational, technical, social, and economic/financial. The approaches to formalization, as well as the barrier categories, were validated through the assessment of twenty case studies of formalization. Building on the assessment, the paper discussed possible links between formalization approaches and barriers, the ‘persistent’ challenges that represent barriers to formalization, as well as key enabling factors improving the likelihood of successful formalization. Regardless of the type of approach adopted to formalization, the review identifies measures to remove barriers in all five categories, with a stronger link between the approaches 1 and 2 and the existence of measures in the policy, institutional, and financial categories. Regarding persistent barriers, the review identified ones arising from the absence of measures to address a particular issue before formalization or due to specific country- or sector-related conditions, and their interaction with the MSWM context. 75% of the case studies had persistent barriers in respect of policy/legal issues, 50% of institutional/organizational, 45% of financial/economic, and 40%, and 35% of social and technical issues respectively. This paper concludes that independently of the formalization approach, the lack of interventions or measures in any of the five categories of barriers may lead formalization initiatives to fail, as unaddressed barriers become ‘persistent’ after formalization is implemented.
Furthermore, 'persistent barriers' may also appear due to unfavorable country-specific conditions. The success of a formalization initiative does not depend on a specific approach, but most likely on the inclusion of country-appropriate measures at the policy, economic and institutional levels. The empowerment of informal waste-workers is again confirmed as a further key success factor for their formalization.
A Prediction-based Smart Meter Data Generator

With the prevalence of cloud computing and Internet of Things (IoT), smart meters have become one of the main components of smart city strategy. Smart meters generate large amounts of fine-grained data that is used to provide useful information to consumers and utility companies for decision-making. Now-a-days, smart meter analytics systems consist of analytical algorithms that process massive amounts of data. These analytics algorithms require ample amounts of realistic data for testing and verification purposes. However, it is usually difficult to obtain adequate amounts of realistic data, mainly due to privacy issues. This paper proposes a smart meter data generator that can generate realistic energy consumption data by making use of a small real-world dataset as seed. The generator generates data using a prediction-based method that depends on historical energy consumption patterns along with Gaussian white noise. In this paper, we comprehensively evaluate the efficiency and effectiveness of the proposed method based on a real-world energy data set.

A proposal to measure absolute environmental sustainability in lifecycle assessment

Environmental monitoring indicates that progress towards the goal of environmental sustainability in many cases is slow, non-existing or negative. Indicators that use environmental carrying capacity references to evaluate whether anthropogenic systems are, or will potentially be, environmentally sustainable are therefore increasingly important. Such absolute indicators exist, but suffer from shortcomings such as incomplete coverage of environmental issues, varying data quality and varying or insufficient spatial resolution. The purpose of this article is to demonstrate that life cycle assessment (LCA) can potentially reduce or eliminate these shortcomings. We developed a generic mathematical framework for the use of carrying capacity as environmental sustainability reference in spatially resolved life cycle impact assessment models and applied this framework to the LCA impact category terrestrial acidification. In this application carrying capacity was expressed as acid deposition (eq. mol H+ ha−1 year−1) and derived from two complementary pH related thresholds. A geochemical steady-state model was used to calculate a carrying capacity corresponding to these thresholds for 99,515
Spatial units worldwide. Carrying capacities were coupled with deposition factors from a global deposition model to calculate characterisation factors (CF), which expresses space integrated occupation of carrying capacity (ha year) per kg emission. Principles for calculating the entitlement to carrying capacity of anthropogenic systems were then outlined, and the logic of considering a studied system environmentally sustainable if its indicator score (carrying capacity occupation) does not exceed its carrying capacity entitlement was demonstrated. The developed CFs and entitlement calculation principles were applied to a case study evaluating emission scenarios for personal residential electricity consumption supplied from 45 US coal-fired electricity plants. Median values of derived CFs are 0.16–0.19 ha year kg−1 for common acidifying compounds. CFs are generally highest in Northern Europe, Canada and Alaska due to the low carrying capacity of soils in these regions. Differences in indicator scores of the case study emission scenarios are to a larger extent driven by variations in pollution intensities of electricity plants than by spatial variations in CFs. None of the 45 emission scenarios could be considered environmentally sustainable when using the relative contribution to GDP or the grandfathering (proportionality to past emissions) valuation principles to calculating carrying capacity entitlements. It is argued that CFs containing carrying capacity references are complementary to existing CFs in supporting decisions aimed at simultaneously reducing environmental impacts efficiently and maintaining or achieving environmental sustainability. We have demonstrated that LCA indicators can be modified from being relative to being absolute indicators of environmental sustainability. Further research should focus on quantifying uncertainties related to choices in indicator design and on reducing uncertainties effectively. © 2015 Elsevier Ltd. All rights reserved.
A real options approach to analyse wind energy investments under different support schemes

A real options model is developed to evaluate wind energy investments in a realistic and easily applicable way. Considering optimal investment timing and sizing (capacity choice), the model introduces a capacity constraint as part of the optimisation. Several correlated uncertainty factors are combined into a single stochastic process, which allows for analytical (closed-form) solutions. The approach is well suited for quantitative policy analysis, such as the comparison of different support schemes. A case study for offshore wind in the Baltic Sea quantifies differences in investment incentives under feed-in tariffs, feed-in premiums and tradable green certificates. Investors can under certificate schemes require up to 3% higher profit margins than under tariffs due to higher variance in profits. Feed-in tariffs may lead to 15% smaller project sizes. This trade-off between faster deployment of smaller projects and slower deployment of larger projects is neglected using traditional net present value approaches. In the analysis of such trade-off, previous real options studies did not consider a capacity constraint, which is here shown to decrease the significance of the effect. The impact on investment incentives also depends on correlations between the underlying stochastic factors. The results may help investors to make informed investment decisions and policy makers to strategically design renewable support and develop tailor-made incentive schemes.

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Area of Concern: A new paradigm in life cycle assessment for the development of footprint metrics

As a class of environmental metrics, footprints have been poorly defined, have shared an unclear relationship to life cycle assessment (LCA), and the variety of approaches to quantification have sometimes resulted in confusing and contradictory messages in the marketplace. In response, a task force operating under the auspices of the UNEP/SETAC Life Cycle Initiative project on environmental life cycle impact assessment (LCIA) has been working to develop generic guidance for developers of footprint metrics. The purpose of this paper is to introduce a universal footprint definition and related terminology as well as to discuss modelling implications. The task force has worked from the perspective that footprints should be based on LCA methodology, underpinned by the same data systems and models as used in LCA. However, there are important differences in purpose and orientation relative to LCA impact category indicators. Footprints have a primary orientation toward society and nontechnical stakeholders. They are also typically of narrow scope, having the purpose of reporting only in relation to specific topics. In comparison, LCA has a primary orientation toward stakeholders interested in comprehensive evaluation of overall environmental performance and trade-offs among impact categories. These differences create tension between footprints, the existing LCIA framework based on the area of protection paradigm and the core LCA standards ISO14040/44. In parallel to area of protection, we introduce area of concern as the basis for a universal footprint definition. In the same way that LCA uses impact category indicators to assess impacts that follow a common cause-effect pathway toward areas of protection, footprint metrics address areas of concern. The critical difference is that areas of concern are defined by the interests of stakeholders in society rather than...
the LCA community. In addition, areas of concern are stand-alone and not necessarily part of a framework intended for comprehensive environmental performance assessment. The area of concern paradigm is needed to support the development of footprints in a way that fulfils their distinctly different purpose. It is also needed as a mechanism to extricate footprints from some of the provisions of ISO 14040/44 which are not considered relevant. Specific issues are identified in relation to double counting, aggregation and the selection of relevant indicators. The universal footprint definition and related terminology introduced in this paper create a foundation that will support the development of footprint metrics in parallel with LCA.
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Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.633 SNIP 1.742
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.64 SNIP 1.439
Web of Science (2004): Indexed yes
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Argumentation and Reasoning in Design: An Empirical Analysis of the Effects of Verbal Reasoning on Idea Value in Group Idea Generation

Reasoning is argumentative and is at the core of design activity and thinking. Understanding the influence of reasoning on the value of ideas is key to support design practice. The paper aims to show the effect of verbal reasoning on the value of ideas. Protocol analyses of four industry cases doing idea generation shows that framing by certainty and deductive reasoning lead to useful incremental ideas while framing by uncertainty and abductive reasoning lead to radical ideas. The paper concludes that the way of framing ideas is indicative of how ideas add value to on-going design processes.

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A Simple Synchro – Modal Decision Support Tool for the Piraeus Container Terminal

The concept of Synchro modality is effectively an evolution of a multimodal supply chain. It integrates different transport modes and gives shippers and logistics service providers the freedom to deploy different modes of transportation in the same chain and in a flexible way so as to gain the desired outcome according to their priorities in a certain trip. Time,
costs and emissions are certainly the three most relevant parameters when talking about a multimodal transportation chain. In most cases the logistics provider has set priorities to conform with, and obviously above mentioned constrains influence each other in an adverse way. With the development of ICT technologies and systems installed on board and on shore and with a simple decision support system fed with input from tracking and tracing systems or traffic monitoring systems, one can easily and flexibly plan his transportation job and maintain his set priority while in parallel keeping the remaining two parameters in control. Down times for example could be eliminated and efficiency gains could be achieved with decreased environmental footprint.

The Port of Piraeus is the largest Greek seaport and one of the largest ports in the Mediterranean Sea basin. It exhibits an impressive container traffic growth rate over the last 4 years triggered by its partial privatization and a recently completed hinterland connection to the rail network, which associated the port with the South-Eastern European corridor e.g. the route Far Eastern ports–Piraeus–Prague.

The current paper will present an easy to use simple tool to continuously assess even during the transportation event all the alternative modes for a given destination in terms of time cost and emissions. An analytical fully parameterized model will be the basis for this tool which will be run for the chain Shanghai–Piraeus–Prague. The overall scenario is as follows: A container ship is arriving from China to the Piraeus Container Terminal. One of its containers is destined to an inland Enterprise in Prague. The most common way for transportation to Prague is rail, but also truck could be an alternative solution and of course a combination of a Short Sea Shipping part to Thessaloniki and then truck or train to Prague. Emphasis in the calculations will be given to emissions for all the modes and relations will be shown with time and cost. The tool developed is based on the case study above, being however open architecture software it can be expanded and applied to other ports and routes. The final outcome will be an easy and user friendly tool with the possibility to alter different input parameters and receive quickly a useful decision support system for the shipper or the logistics providers. Finally, there are two loops foreseen for the runs of the program. The required input parameters at each stage are either directly fed to the program if available (e.g vessels ETA and position through GPS, VTS, ETC) or calculated if this is not the case.
influence each other in an adverse way. With the development of ICT technologies and systems installed on board and on shore and with a simple decision support system fed with input from tracking and tracing systems or traffic monitoring systems, one can easily and flexibly plan his transportation job and maintain his set priority while in parallel keeping the remaining two parameters in control. Down times for example could be eliminated and efficiency gains could be achieved with decreased environmental footprint. The Port of Piraeus is the largest Greek seaport and one of the largest ports in the Mediterranean Sea basin. It exhibits an impressive container traffic growth rate over the last 4 years triggered by its partial privatization and a recently completed hinterland connection to the rail network, which associated the port with the South-Eastern European corridor e.g. the route Far Eastern ports – Piraeus – Prague. The current paper will present an easy to use simple tool to continuously assess even during the transportation event all the alternative modes for a given destination in terms of cost and emissions. An analytical fully parameterized model will be the basis for this tool which will be run for the chain Shanghai - Piraeus – Prague. The overall scenario is as follows: A container ship is arriving from China to the Piraeus Container Terminal. One of its containers is destined to an inland Enterprise in Prague. The most common way for transportation to Prague is rail, but also truck could be an alternative solution and of course a combination of a Short Sea Shipping part to Thessaloniki and then truck or train to Prague. Emphasis in the calculations will be given to emissions for all the modes and relations will be shown with time and cost. The tool developed is based on the case study above, being however open architecture software it can be expanded and applied to other ports and routes. The final outcome will be an easy and user friendly tool with the possibility to alter different input parameters and receive quickly a useful decision support system for the shipper or the logistics providers. Finally there are two loops foreseen for the runs of the program. The required input parameters at each stage are either directly fed to the program if available (e.g vessels ETA and position through GPS, VTS, ETC) or calculated if this is not the case.

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Assessing environmental performance of humidification technology used in supply of fresh fruit and vegetables
Distributions chains in Europe of most fresh fruit and vegetables follow a pattern where fruit or vegetables produced in southern European countries are typically transported to countries in the central or northern parts of Europe. The relatively complex supply and distribution chain with many actors involved (from farmers, through wholesalers, to retailers) highlights the need for minimizing food loss in the post-harvest to optimize the overall environmental performance of agricultural systems in Europe. Humidification is an emerging technology that can potentially contribute to minimize post-harvest losses of fruit and vegetables. Humidifiers release a fine mist thereby reducing the difference in water vapour pressure at the surface of the

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Assessing environmental performance of humidification technology used in supply of fresh fruit and vegetables
Distributions chains in Europe of most fresh fruit and vegetables follow a pattern where fruit or vegetables produced in southern European countries are typically transported to countries in the central or northern parts of Europe. The relatively complex supply and distribution chain with many actors involved (from farmers, through wholesalers, to retailers) highlights the need for minimizing food loss in the post-harvest to optimize the overall environmental performance of agricultural systems in Europe. Humidification is an emerging technology that can potentially contribute to minimize post-harvest losses of fruit and vegetables. Humidifiers release a fine mist thereby reducing the difference in water vapour pressure at the surface of the
fruit or vegetable and in the air, preventing dry-out of fruits and deterioration. In addition, humidification provides cooling as a result of the evaporation of the droplets into the unsaturated air, without exchange with the environment (adiabatic cooling effect). The overall environmental performance of the humidification technology is expected to be determined by the trade-offs between lower environmental impacts stemming mainly from a reduction in loss and associated agricultural efforts and increased impacts mainly due to the need for new equipment and increased water use.

We assessed environmental performance of humidification technology in the European context. Lettuce produced in Italy and transported to Denmark was chosen as a case study, and sensitivity scenarios considered strawberries, flat peaches, asparagus, and table grapes. The results show that the technology has the potential to reduce life cycle environmental impacts, provided that it allows reducing food loss in the post-harvest. When compared to the conventional supply chain of lettuce without humidification, the impact scores are reduced on average by 2.6, 6.0 and 7.4% when the total losses of the supply chain are decreased by 2, 5 and 6%, respectively (corresponding to low, medium and high efficiency of the technology). This is true for all impact categories, except resource depletion which is driven by the humidifier production and disposal stages rather than agriculture. Thus, depending on the performance of humidifying units, humidification may have the potential to reduce environmental impacts stemming from supply of fresh fruit and vegetables in Europe.

Assessing environmental performance of hydrothermal carbonization of wet biomass at industry-relevant scales

Assessing the cost saving potential of shared product architectures

This article presents a method for calculating cost savings of shared architectures in industrial companies called Architecture Mapping and Evaluation. The main contribution is an operational method to evaluate the cost potential and evaluate the number of product architectures in an industrial company. Experiences from the case company show it is possible to reduce the number of architectures with 60% which leads to significant reduction in direct material and labor costs. This can be achieved without compromising the market offerings of products. Experiences from the case study indicate cost reductions between 0.5% and 2% of turnover. The main implication is that the method provides a quantitative basis for the discussion on whether or not to implement shared product architectures. This means a more fact-based approach is introduced.
Assessing the influence of groundwater and land surface scheme in the modelling of land surface-atmosphere feedbacks over the FIFE area in Kansas, USA

The land surface-atmosphere interaction is described differently in large scale surface schemes of regional climate models and small scale spatially distributed hydrological models. In particular, the hydrological models include the influence of shallow groundwater on evapotranspiration during dry periods where soils are depleted and groundwater is the only water supply. These mechanisms are analysed by combining a distributed hydrological model (MIKE SHE) and a regional climate model (HIRHAM) and comparing simulation results to the FIFE area observation data in Kansas, USA. The numerical experiments include five simulations. First MIKE SHE is forced by observed climate data in two versions i) with groundwater at a fixed uniform depth, and ii) with a dynamical groundwater component simulating shallow groundwater conditions in river valleys. iii) In a third simulation MIKE SHE is forced by HIRHAM simulated precipitation. The last two simulations include iv) a standard HIRHAM simulation, and v) a fully coupled HIRHAM-MIKE SHE simulation locally replacing the land surface scheme by MIKE SHE for the FIFE area, while HIRHAM in standard configuration is used for the remaining model area. The results show a clear correlation between depth to the groundwater and evapotranspiration with a distinct groundwater depth threshold at 0.5-3 m. During the dry summer period the two MIKE SHE simulations using distributed groundwater reproduced evapotranspiration better than MIKE SHE with unsaturated flow alone and the HIRHAM simulations. This indicates that including dynamic groundwater in a fully coupled climate-hydrological model may improve evapotranspiration fluxes from areas with shallow groundwater tables.

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Scopus rating (2002): SJR 0.406 SNIP 0.711
Assessment of Metal Toxicity in Marine Ecosystems: Comparative Toxicity Potentials for Nine Cationic Metals in Coastal Seawater

This study is a first attempt to develop globally applicable and spatially differentiated marine Comparative Toxicity Potentials (CTPs) or ecotoxicity characterization factors for metals in coastal seawater for use in Life Cycle Assessment. The toxicity potentials are based exclusively on marine ecotoxicity data and take account of metal speciation and bioavailability. CTPs were developed for nine cationic metals (Cd, Cr(III), Co, Cu(II), Fe(III), Mn, Ni, Pb and Zn) in 64 Large Marine Ecosystems (LMEs) covering all coastal waters in the world. The results showed that the CTP of a specific metal varies 3-4 orders of magnitude across LMEs, largely due to different seawater residence time. Therefore the highest toxicity potential for metals was found in the LMEs with the longest seawater residence times. Across metals, the highest CTPs were observed for Cd, Pb and Zn. At the concentration levels occurring in coastal seawaters, Fe acts not as a toxic agent but an essential nutrient and thus has CTPs of zero.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment
Authors: Dong, Y. (Intern), Rosenbaum, R. K. (Intern), Hauschild, M. Z. (Intern)
Pages: 269–278
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Main Research Area: Technical/natural sciences

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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.26 SJR 2.538 SNIP 1.889
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.584 SNIP 1.828 CiteScore 5.61
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.777 SNIP 2.017 CiteScore 5.5
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.956 SNIP 2.103 CiteScore 5.52
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.146 SNIP 2.056 CiteScore 5.17
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
A step-by-step plan to manage and measure adding value by FM/CREM.

Purpose
To present a new Value Adding Management model in order to support decision makers in identifying appropriate interventions to add value to the organisation, to manage its implementation, and to measure the output and outcomes.

Theory
The paper builds on value adding management theories and models including the triplet input-throughput-output, a distinction between output, outcome and added value, the Plan-Do-Act-Check cycle, change management and performance measurement. Design/methodology/approach Literature review and a cross-chapter analysis of a forthcoming book, where authors from different European countries present a state of the art of theory and research on 12 value parameters, how to manage and measure each value, and to discuss the costs and benefits of typical FM and CREM interventions to enhance satisfaction, image, culture, health and safety, productivity, adaptability, innovation, risk, cost, value of assets, sustainability and Corporate Social Responsibility.

Findings
The new Value Adding Management model follows the steps from the well-known Plan-Do-Check-Act cycle. The four steps are supported by various tools that were found in the literature or came to the fore in the state-of-the-art sections of the 12 value parameters. Furthermore an overview is presented of ways to measure the 12 value parameters and related Key Performance Indicators.

Originality/value
Much has been written about adding value by FM and CREM. This paper presents a new Value Adding Management model that opens the black box of input-throughput-output-outcome and which
A suggested minimum data list for documenting experimental plant uptake studies

General information
State: Published
Organisations: Department of Environmental Engineering, Environmental Chemistry, Department of Management Engineering, Quantitative Sustainability Assessment, Norwegian Institute for Agricultural and Environmental Research
Authors: Trapp, S. (Intern), Doucette, W. (Ekstern), Fantke, P. (Intern), Eggen, T. (Ekstern)
Pages: 162-163
Publication date: 2016

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Main Research Area: Technical/natural sciences
Conference: SETAC Europe 26th Annual Meeting, Nantes, France, 22/05/2016 - 22/05/2016
Electronic versions:
SETAC_Europe_Abstractbook_Nantes.pdf
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2016

A systematic approach applied in design of a micro heat exchanger

The number of products benefiting from micro components in the market is increasing, and consequently, the demand for well-matched tools, equipment and systems with micro features is eventually increasing as well. During the design process of micro products, a number of issues appear which are inherent due to the down scaling or physical phenomena dominating in the micro range but negligible in the macro scale. In fact, some aspects in design for micro manufacturing are considerably different compared to the de- sign procedure taken at the macro level. Identifying the differences between design considerations at micro compared to macro scale, and defining potential guidelines based on them, provides an opportunity to modify the conventional design methodologies towards becoming micro specific. In this pa- per, the need for a micro-oriented approach for designing mi- cro products which has not been investigated hitherto studied.

For this purpose, an additional step named “Rules To Consider” (RTC) is added to the conventional design methodol- ogy. This step is constituted based on the feedbacks gained during analyzing the different iterations of the design. The knowledge obtained during the design process of a micro product can be added to the RTC unit, and this unit becomes enriched progressively in design process of similar micro products and supplemented to the conventional design meth- odologies to be served as a micro-oriented design methodol- ogy. In order to present the application of RTC unit, the design process of a micro heat exchanger is investigated. Manufacturability and functional performance are considered as evaluation criteria, and the lessons learned from each de- sign iteration and evaluation are employed in the subsequent design proposals until an acceptable design is achieved. Thermal performance of the heat exchangers is evaluated using finite element (FE) simulation of the conjugate heat transfer. The design proposals are optimized in terms of geo- metrical dimensions, and a sensitivity analysis is conducted on the mass flow rate and heat generation power in the heat source. Finally, the designs with higher thermal performance and manufacturability are introduced. The result of the ther- mal analysis reveals the fact that the presence of the fins and modification of their dimensions as well as the constituent material for fabricating the micro heat exchanger do not sig- nificantly improve the thermal performance of the micro heat exchangers. This is an interesting outcome which can result in considerable reduction of the manufacturing costs by simpli- fying the geometrical design of the heat exchanger. The micro-specific design considerations which are extracted from the design process of the micro heat exchanger are added to the RTC unit and can be applied as guidelines in
design process of any other micro heat exchanger. In other words, the current study can provide a useful guideline in design for manufacturing of micro products.

**General information**

State: Published

Organisations: Department of Mechanical Engineering, Manufacturing Engineering, Department of Management Engineering, Department of Energy Conversion and Storage

Authors: Omidvarnia, F. (Intern), Hansen, H. N. (Intern), Sarhadi, A. (Intern)

Number of pages: 9

Pages: 1187-1195

Publication date: 2016

Main Research Area: Technical/natural sciences

**Publication information**

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BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.3 SJR 0.967 SNIP 1.548
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.858 SNIP 1.274 CiteScore 1.8
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.084 SNIP 1.879 CiteScore 2.03
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.133 SNIP 2.117 CiteScore 2.26
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.982 SNIP 2.091 CiteScore 1.75
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.821 SNIP 1.624 CiteScore 1.61
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.777 SNIP 1.418
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.806 SNIP 1.355
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.509 SNIP 1.011
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.436 SNIP 0.73
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.484 SNIP 1.103
Web of Science (2006): Indexed yes
A systems approach to cyber-risk management

General information
State: Published
Organisations: Department of Management Engineering, Management Science
Authors: Sepúlveda Estay, D. A. (Intern), Khan, O. (Intern)
Pages: 18-21
Publication date: 2016
Main Research Area: Technical/natural sciences

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Journal: Operations Management
Volume: 42
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Electronic versions:
A_systems_approach.pdf
Source: PublicationPreSubmission
Source-ID: 122693333
Publication: Research › Journal article – Annual report year: 2016

A three-level framework for performance-based railway timetabling
The performance of railway operations depends highly on the quality of the railway timetable. In particular for dense railway networks it can be challenging to obtain a stable robust conflict-free and energy-efficient timetable with acceptable infrastructure occupation and short journey times. This paper presents a performance-based railway timetabling framework integrating timetable construction and evaluation on three levels: microscopic, macroscopic, and a corridor fine-tuning level, where each performance indicator is optimized or evaluated at the appropriate level. A modular implementation of the three-level framework is presented and demonstrated on a case study on the Dutch railway network illustrating the feasibility of this approach to achieve the highest timetabling design level.

General information
State: Published
Organisations: Department of Management Engineering, Delft University of Technology, Technische Universität Dresden, University of Bologna
Authors: Goverde, R. M. P. (Ekstern), Bešinović, N. (Ekstern), Binder, A. (Ekstern), Cacchiani, V. (Ekstern), QuagliaEtt, E. (Ekstern), Roberti, R. (Intern), Toth, P. (Ekstern)
Pages: 62-83
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Main Research Area: Technical/natural sciences

Publication information
Journal: Transportation Research. Part C: Emerging Technologies
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ISSN (Print): 0968-090X
Ratings:
BFI (2018): BFI-level 2
A Toolkit for Preparation of Low Carbon Mobility Plan.

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
A Weighted K-AP Query Method for RSSI based Indoor Positioning

The paper studies the establishment of offline fingerprint library based on RSSI (Received Signal Strength Indication), and proposes WF-SKL algorithm by introducing the correlation between RSSIs. The correlations can be transformed as AP fingerprint sequence to build the offline fingerprint library. To eliminate the positioning error caused by instable RSSI value, WF-SKL can filter the noise AP via online AP selection, meanwhile it also reduces the computation load. WF-SKL utilizes LCS algorithm to find out the measurement between the nearest neighbors, and it proposes K-AP (P,Q) nearest neighbor queries between two sets based on Map-Reduce framework. The algorithm can find out K (P,Q) nearest positions and weighted them for re-positioning to accelerate the matching speed between online data and offline data, and also improve the efficiency of positioning. According to a large scale positioning experiments, WF-SKL algorithm proves its high accuracy and positioning speed comparing with KNN indoor positioning.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, DTU Climate Centre, University of Shanghai for Science and Technology, University of Oulu
Authors: Huo, H. (Ekstern), Liu, X. (Intern), Li, J. (Ekstern), Yang, H. (Ekstern), Peng, D. (Ekstern), Chen, Q. (Ekstern)
Pages: 150-163
Publication date: 2016

Back to basics - the school lunch

Purpose

The effort to develop social life cycle assessment (Social LCA) along the same principles and procedural steps as LCA has met serious challenges when characterizing social impacts as originating from product life cycles and attributing them to unit processes. This article puts the resulting life cycle CSR and its focus on the production phase on hold. It suggests a research design to support consumers in choosing between, e.g. alternative school lunch scenarios, according to their subjective social and cultural values.
Methods

Inspired by Reverse LCA, the focus of life cycle CSR on the production phase is shifted to the consumer need. Reverse LCA claims that starting with the need will point to alternative innovative systems of products and services to fulfil that need. The assessment to identify the system with the minimal environmental impact can then be established in reverse. The concept of foodscape captures the school lunch as a specific configuration of food products, social practices and values. The concept of human well-being defined by Amartya Sen and elaborated by Martha C. Nussbaum helps to characterize the needs involved in the school lunch. The assessment is performed as action research by the community of stakeholders involved and using an interactive scenario analysis.

Results and discussion

As a first step, the outline research design acknowledges that schools embody a distinct and articulate stakeholder community advocating multidimensional needs, the fulfilment of which is continuously evaluated for prioritization and optimization. Second, three preliminary school lunch scenarios are identified. The concept of foodscape is introduced to clarify and characterize dimensions, assumptions and fundamental choices for each scenario. As a third step, stakeholders evaluate and profile each scenario in terms of valuable functionings for human well-being. Furthermore, stakeholders review documentation on environmental and social impacts throughout the earlier stages of the product life cycles involved. The targeted outcome of stakeholders’ negotiation is a decision on a particular configuration, for which an action plan detailing the pathway to the desired school lunch scenario is adopted.

Conclusions

The introduction of the concepts of foodscape and human well-being supports the argument that social LCA needs a strong foundation in social theory for the specific domain to be assessed and for the overall conceptualization of social impacts. Dialogues with social scientists are needed, especially with those who apply a life cycle perspective.
Bæredygtig ledelse

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management
Authors: Poulsen, S. (Intern), Edwards, K. (Intern), Ipsen, C. (Intern)
Publication date: 2016

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Main Research Area: Technical/natural sciences
Electronic versions:
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Source-ID: 128542641
Publication: Communication › Internet publication – Annual report year: 2017
Balancing Performance and Employee Well-being across Distances: A New Tool to Distance Managers

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Technical University of Denmark
Authors: Ipsen, C. (Intern), Nygaard, L. (Ekstern), Aabo, A. (Ekstern)
Pages: 306
Publication date: 2016

Host publication information
Title of host publication: Book of Proceedings. 12th EAOHP Conference: Occupational Health Psychology in Times of Change: Society and the Workplace
Publisher: European Academy of Occupational Health Psychology
Editors: Teoh, K., Dediu, V., Saade, N. J., Hassard, J.
Article number: P1
Main Research Area: Technical/natural sciences
Conference: 12th Conference of the European Academy of Occupational Health Psychology, Athens, Greece, 10/04/2016 - 10/04/2016
Electronic versions:
Balancing_Performance_and_Employee.pdf
Links:
Publication: Research - peer-review » Conference abstract in proceedings – Annual report year: 2016

Band gap tuning of amorphous Al oxides by Zr alloying
The optical band gap and electronic structure of amorphous Al-Zr mixed oxides, with Zr content ranging from 4.8 to 21.9% were determined using vacuum ultraviolet (VUV) and X-ray absorption spectroscopy (XAS). The light scattering by the nano-porous structure of alumina at low wavelengths was estimated based on the Mie scattering theory. The dependence of the optical band gap of the Al-Zr mixed oxides on Zr content deviates from linearity and decreases from 7.3 eV for pure anodized Al2O3 to 6.45 eV for Al-Zr mixed oxide with Zr content of 21.9%. With increasing Zr content, the conduction band minimum changes non-linearly as well. Fitting of the energy band gap values resulted in a bowing parameter of 2 eV. The band gap bowing of the mixed oxides is assigned to the presence of the Zr d-electron states localized below the conduction band minimum of anodized Al2O3.

General information
State: Published
Organisations: Department of Photonics Engineering, Optical Microsensors and Micromaterials, Department of Mechanical Engineering, Materials and Surface Engineering, Department of Management Engineering, Risø National Laboratory for Sustainable Energy, Paul Scherrer Institut, Danish Technological Institute, Aarhus University
Authors: Canulescu, S. (Intern), Jones, N. C. (Ekstern), Borca, C. N. (Ekstern), Piamonteze, C. (Ekstern), Rechendorff, K. (Ekstern), Gudla, V. C. (Intern), Bordo, K. (Intern), Nielsen, L. P. (Ekstern), Hoffmann, S. V. (Ekstern), Almtoft, K. P. (Ekstern), Ambat, R. (Intern), Schou, J. (Intern)
Number of pages: 4
Publication date: 2016
Main Research Area: Technical/natural sciences

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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.67 SJR 1.132 SNIP 0.996
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.085 SNIP 0.983 CiteScore 2.47
Web of Science (2015): Indexed yes
Barriers for flexibility in the district heating-electricity interface

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Green House Gas (GHG) emissions are not the only emissions of concern to the international transport community. SOx emissions are non-GHG emissions that are caused by the presence of sulphur in the fuel. As the maximum percentage of sulphur in automotive and aviation fuels is strictly regulated in most countries around the world, much of the attention in recent years has focused on maritime transport. The attention mainly stems from the fact that in marine fuels the percentage of sulphur can be very high: it can be as high as 4.5 % in Heavy Fuel Oil (HFO), which is the fuel typically used in all deep-sea trades. Even though the amounts of SOx produced by ships are substantially lower than CO2, SOx emissions are highly undesirable as they cause acid rain and undesirable health effects in humans and animals. To mitigate these adverse environmental effects, the international shipping community has taken substantial policy measures. With the introduction of new limits for the content of sulphur in marine fuels in Northern European and North American sea areas, short-sea companies operating in these areas will face substantial additional cost. As of 1/1/2015, international regulations stipulate, among other things, a 0.1% limit in the sulphur content of marine fuels, or equivalent measures limiting the percent of SOx emissions to the same amount. As low-sulphur fuel is substantially more expensive than HFO, there is little or no room within these companies current margins to absorb such additional cost, and thus significant price increases must be expected. Unlike its deep-sea counterpart, in short-sea shipping such a freight rate increase may
induce shippers to use landbased alternatives (mainly road). A reverse shift of cargo would go against the EU policy to shift traffic from land to sea to reduce congestion, and might ultimately (under certain circumstances) increase the overall level of CO2 emissions along the entire supply chain. The purpose of this chapter is to investigate the potential effect of sulphur regulations on the share of cargo transported by the waterborne mode vis-à-vis land-based alternatives.

**General information**
State: Published
Organisations: Department of Management Engineering, Management Science, National Technical University of Athens
Authors: Kontovas, C. A. (Intern), Panagakos, G. (Intern), Psaraftis, H. N. (Intern), Stamatopoulou, E. (Ekstern)
Pages: 351-386
Publication date: 2016

**Host publication information**
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ISBN (Electronic): 978-3-319-17175-3

Series: International Series in Operations Research and Management Science
Volume: 226
Main Research Area: Technical/natural sciences
Economics, Econometrics and Finance (all), Business, Management and Accounting (all), Engineering (all), Management Science and Operations Research, Strategy and Management, Applied Mathematics, Computer Science Applications, Software
DOIs:
10.1007/978-3-319-17175-3_10
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Source-ID: 2291773376
Publication: Research - peer-review › Book chapter – Annual report year: 2016

**Beskrivelse af trafik**

**General information**
State: Published
Organisations: Department of Transport, Transport policy and behaviour
Authors: Nielsen, T. A. S. (Intern)
Pages: 139-139
Publication date: 2016

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Title of host publication: Videnskabelig udredning af international viden om skifergas relateret til en dansk kontekst : DTU, GEUS, DCE
Publisher: Aarhus Universitet, GEUS og Danmarks Tekniske Universitet
Chapter: 5.5
Main Research Area: Technical/natural sciences
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DTU_GEUS_DCE_2016_Videnskabelig_udredning_af_international_viden_om_skifergas_relateret_til_en_dansk_kontekst.pdf
Publication: Commissioned › Report chapter – Annual report year: 2016

**Best Practices and Case Studies for Industrial Energy Efficiency Improvement: An Introduction for Policy Makers**

**General information**
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
Number of pages: 173
Publication date: 2016

**Publication information**
Publisher: UNEP DTU Partnership
ISBN (Print): 978-87-93130-81-4
Betydningen af sociale normer for distraktion under bilmørsel

An American study shows that social norms have importance for young people's involvement in distracting activities. Interventions that support parents to be good role models and contribute to correcting misunderstandings about the extent of distracting activities among parents and surrounding peers are therefore extremely relevant.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern)
Publication date: 2016
Main Research Area: Technical/natural sciences

Electronic versions: Best_Practises_for_Industrial_EE_web_1_.pdf
Links: http://www.energyefficiencycentre.org
Source: PublicationPreSubmission
Source-ID: 127080938
Publication: Research - peer-review › Book – Annual report year: 2016

Bio-based chemicals - green, but also sustainable?

For almost two decades, the chemical industry has put great effort into developing bio-chemicals, among others to fight global warming caused by greenhouse gas emissions, one of the biggest threats that are faced by our society today. To facilitate a growing and versatile bio-based chemical production, the US Department of Energy proposed in 2004 a list of 12 building block chemicals which can either be converged through biological or chemical conversions. Moving toward more bio-based chemicals, the chemical industry does not only claim to reduce climate change impacts, but also that they are increasing overall sustainability in chemical production. Whether such claims are justifiable is unclear. When sustainability of bio-based polymer production is assessed, various environmental trade-offs occur that need to be considered. It is not enough to claim that a bio-chemical is sustainable by exclusively looking at reduced global warming impacts related to avoiding oil refining and related greenhouse gas emissions. However, there is big variation of which impacts are assessed and which life cycle stages are included between existing published studies focusing on assessing environmental sustainability of bio-based polymers.

General information
State: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, Research Groups, Applied Metabolic Engineering, Quantitative Sustainability Assessment, iLoop, Department of Management Engineering, Carlsberg Research Laboratory
Authors: Ógmundarson, Ó. (Intern), Herrgard, M. (Intern), Förster, J. (Intern), Fantke, P. (Intern)
Publication date: 2016
Event: Abstract from ATV Sustain conference. .
Main Research Area: Technical/natural sciences
Electronic versions: Oegmundarson_2016a.pdf
Links: http://www.trafiksikkerhedsforskning.dtu.dk/Arkiv/Nr-33/Distraktion-og-sociale-normer
Source: PublicationPreSubmission
Source-ID: 127473282
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2016

Biochar amended soils and crop productivity: A critical and meta-analysis of literature

Biochar is a kind of charcoal used for soil improvement and it is produced by pyrolysis of biomass under low or anaerobic conditions. It has the potential to mitigate climate change, via carbon sequestration, decrease soil acidity and increase agricultural productivity. Historically it is known that the Amazonians used biochar to enhance soil productivity by smoldering agricultural wastes. Desk reviewed of articles of soil amended biochar and some attributes which enhance
crop development and the economic benefits derived from its use in agriculture were critically analysed. A meta-analysis using twenty-seven (27) articles reveal that the temperature at which pyrolysis is done is a major contributing factor towards the intended use of the biochar. For the purpose of crop yield, a temperature of 550°C is recommended based on the regression results. It is recommended that an in-depth study should be done for particular crops taking into consideration the soil and the geographical location of such crops for yield enhancement.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, University of Ghana
Authors: Baidoo, I. (Ekstern), Sarpong, D. B. (Ekstern), Bolwig, S. (Intern)
Pages: 414-432
Publication date: 2016
Main Research Area: Technical/natural sciences

Bibliographical note
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Biodiesel from microalgae – greenhouse gas emissions and energy balance
The current use of fossil fuels is problematic for both environmental and economic reasons and biofuels are regarded as a potential solution to current energy issues. This study analyzes the energy balances and greenhouse gas emissions of 24 different technology scenarios for the production of algal biodiesel from Nannochloropsis cultivated at industrial scale in photobioreactors in Denmark. Both consolidated and pioneering technologies are analyzed focusing on strengths and weaknesses which influence the performance. Based on literature data, energy balance and greenhouse gas emissions are determined in a comparative ‘well-to-tank’ Life Cycle Assessment against fossil diesel. Use of by-products from biodiesel production such as glycerol obtained from transesterification and anaerobic digestion of residual biomass are included. Different technologies and methods are considered in cultivation stage (freshwater vs. wastewater; synthetic CO2 vs. waste CO2), harvesting stage (flocculation vs. centrifugation) and oil extraction stage (hexane extraction vs. supercritical CO2 extraction). The choices affecting environmental performance of the scenarios are evaluated. Results show that algal biodiesel produced through current conventional technologies has higher energy demand and greenhouse gas emissions than fossil diesel. However, greenhouse gas emissions of algal biodiesel can be significantly reduced through the use of ‘waste’ flows (nutrients and CO2) but there are still technical difficulties with both microalgae cultivation in wastewater as well as transportation and injection of waste CO2. In any way, a positive energy balance is still far from being achieved. Considerable improvements must be made to develop an environmentally beneficial microalgae biodiesel production on an industrial scale. In particular, different aspects of cultivation need to be enhanced, such as the use of wastewater and CO2–rich flue gas from industrial power plants.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Bologna
Authors: Monari, C. (Ekstern), Righi, S. (Ekstern), Olsen, S. I. (Intern)
Number of pages: 1
Publication date: 2016
Main Research Area: Technical/natural sciences
Links:
http://www.sustain.dtu.dk/

Bibliographical note
Sustain Abstract I-8
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2016
Biodiversity and ecosystem services in life cycle impact assessment – Inventory objects or impact categories?

Biodiversity and ecosystem services are both sensitive to the way we utilize and manage ecosystems and landscapes, but they are not unambiguously linked. It is argued that in Life Cycle Impact Assessment (LCIA) the Area Of Protection (AoP) ‘natural environment’ should be divided into two AoP’s, namely ‘biodiversity’ and ‘ecosystem services’. The AoP biodiversity has more emphasis on intrinsic (existence) values than on utilitarian, functional value perceptions that are covered by the AoP ecosystem services. Ecosystem services can in some aspects be substituted or restored, whereas certain biodiversity losses (e.g. loss of old-growth forest or extinction of a species) are irreversible and thus require a precautionary, conservationist approach. Further, it is suggested that global environmental change scenarios are used in LCIA in order to assess future pressures and potential damages to biodiversity and ecosystem service supplies as a basis for calculating the contribution of a product life cycle to the overall environmental damage.

General information
State: Published
Organisations: Department of Management Engineering
Authors: Callesen, I. (Intern)
Pages: 94-103
Publication date: 2016
Main Research Area: Technical/natural sciences

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Journal: Ecosystem Services
Volume: 22
ISSN (Print): 2212-0416
Ratings:
Web of Science (2018): Indexed yes
Web of Science (2017): Indexed Yes
Scopus rating (2016): SJR 1.935 SNIP 1.389 CiteScore 4.84
Web of Science (2016): Indexed yes
Scopus rating (2015): SJR 2.168 SNIP 1.827 CiteScore 5.65
Scopus rating (2014): SJR 2.588 SNIP 2.567 CiteScore 6.4
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Original language: English
Global and Planetary Change, Geography, Planning and Development, Ecology, Agricultural and Biological Sciences (miscellaneous), Nature and Landscape Conservation, Management, Monitoring, Policy and Law, Climate change, Ecosystem services, Global environmental change, Land management, Life cycle impact assessment
DOIs:
10.1016/j.ecoser.2016.09.021
Source: FindIt
Source-ID: 2347580479
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Biofuel Sustainability: Case Studies and Practical Lessons for South-South Experience Sharing

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Biomass Residues from Agriculture and Potential Contribution towards Modern Energy Supply in West Africa

Access to modern energy services especially in developing countries is an urgent issue. Globally, 1.3 billion people do not have access to modern energy and the services associated with it. Sub-Saharan Africa is one of the regions with a profound lack of modern energy access. The objective of this paper is to understand the role that residues obtained from agricultural practices could be utilised in providing electricity for use in West African countries. Selected countries include: Ghana, Nigeria, Senegal and Togo. The study utilized methods developed by Mendu et. al. 2012, Mabeeet. al. 2010, Ackom et.al., 2013, to estimate electricity production from agricultural residues in the selected countries. This study considered competing utilization of residues for animal fodder, bedding and nutrient recycling in the region. Findings show bioelectricity from residues could supply $0.6 \times 10^6 - 1.5 \times 10^6$ MWh (Ghana), $4.5 \times 10^6 - 13 \times 10^6$ MWh (Nigeria), $0.5 \times 10^6 - 1.2 \times 10^6$ MWh (Senegal) and $0.2 \times 10^6 - 1.3 \times 10^6$ MWh (Togo). This could help bring increased electrification from a renewable energy source to the countries especially in the farming communities where the residue abounds thus ensuring good prospect for improved quality of life, poverty alleviation and sustainable development.

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Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Martinussen, L. M. (Intern)
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Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Book review: Innovation under Uncertainty: The Future of Carbon-free Energy Technology

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State: Published
Organisations: Department of Management Engineering, Energy Economics and Regulation
Authors: Klinge Jacobsen, H. (Intern)
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Borgeres og kommuners erfaringer med borgerdeltagelse i dansk vindmølleplanlægning

General information
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Organisations: Department of Management Engineering, Technology and Innovation Management, University of Copenhagen
Authors: Tolnov Clausen, L. (Ekstern), Nyborg, S. (Intern)
Number of pages: 22
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Bosætningsmønstre i Storkøbenhavn – en model for boliglokalisering og bilejerskab

Viden om, hvordan folk vælger at bosætte sig, er et centraalt emne inden for byforskning, og over de seneste år er det blevet muligt at lave simultan-analyser af, hvordan lokaliseringsadfærd påvirker og påvirkes af forskellige politik tiltag og infrastrukturprojekter, samt hvordan lokaliseringsadfærd hænger sammen med udviklingen af byer og urbane områder. Det kan således lade sig gøre at kigge på, hvordan disse forhold påvirker hinanden indbyrdes.


General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Transport DTU, Kraks Fond, VU University Medical Centre
Authors: Mulalic, I. (Intern), Pilegaard, N. (Intern), Rouwendal, J. (Ekstern)
Number of pages: 70
Publication date: 2016
Bounded rational choice behaviour: applications in transport

Even though the theory of rational behaviour has been challenged for almost 100 years, the dominant approach within the field of transport has been based upon the assumptions of neoclassical economics that we live in a world of rational decision makers who always have perfect knowledge and aim to maximise some subjective measure. Where other fields, for example within the social sciences and psychology, have made serious efforts to explore alternative models derived from principles of bounded rationality, this direction has begun to take speed within transport applications only recently. Bounded rational choice behaviour focuses on how the latter approach can be seriously taken into account within transport applications. As the editors discuss in the introduction, a true optimal choice can only be made if an individual has full and perfect information of all relevant attributes in his/her choice set. An individual is said to demonstrate bounded rational behaviour if he/she does not systematically consider all attributes deemed relevant for the decision problem at hand, does not consider all choice options and/or does not choose the best choice alternative. Such simplified representation and limited processing may occur due to time constraints, low involvement in the decision at hand, relying on habits or the task requiring too high a mental effort.
Bridging the Gap - Role of energy efficiency

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, United Nations Industrial Development Organization, Massachusetts Institute of Technology, Central European University, CEPT University, Indian Institute of Management Ahmedabad
Authors: Dhar, S. (Intern), Farrell, T. C. (Intern), Ghoneim, R. (Ekstern), Urge-Vorsatz, D. (Ekstern), Boles, E. (Ekstern), Boza-Kiss, B. (Ekstern), Matteini, M. (Ekstern), Painuly, J. P. (Intern), Pathak, M. (Ekstern), Petrichenko, K. (Intern), Schreck, B. (Ekstern), Shukla, P. (Ekstern)
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Bridging the gap – the role of non-state action

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Organisations: Department of Management Engineering, UNEP DTU Partnership, NewClimate Institute, German Development Institute, Ecofys B.V., University of Oxford, Yale University, United Nations Environmental Programme, Netherlands Environmental Assessment Agency
Business cases for product configuration systems

In the recent years, product configuration systems (PCSs) have received greater attention from industries providing customized products as a response to increased demand to fulfill diverse customers' needs for customized products. Before developing a PCS, a well-established business case has to be made in order to secure the success and delivery of the project as it will increase the commitment from the business side. This paper presents a framework for supporting the
development of business cases for PCSs and discusses the experiences from multiple case studies benefiting from the suggested framework.

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Organisations: Department of Management Engineering, Management Science
Authors: Shafiee, S. (Intern), Kristjansdottir, K. (Intern), Hvam, L. (Intern)
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**Business process management and IT management: The missing integration**
The importance of business processes and the centrality of IT to contemporary organizations' performance calls for a specific focus on business process management and IT management. Despite the wide scope of business process management covering both business and IT domains, and the profound impact of IT on process innovations, the association between business process management and IT management is under-explored. Drawing on a literature analysis of the capabilities of business process and IT governance frameworks and findings from a case study, we propose the need for horizontal integration between the two management functions to enable strategic and operational business - IT alignment. We further argue that the role of IT in an organization influences the direction of integration between the two functions and thus the choice of integration mechanisms. Using case study findings, we propose that IT as a business enabler respectively calls for sequential and reciprocal integrations at strategic and operational planning levels. Drawing on logical reasoning, we suggest that IT as a strategic driver necessitates reciprocal integration at both levels.

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Organisations: Department of Management Engineering, Management Science, Aalborg University
Authors: Rahimi, F. (Intern), Møller, C. (Ekstern), Hvam, L. (Intern)
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Scopus rating (2016): SJR 1.252 SNIP 2.828 CiteScore 5.68
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.085 SNIP 2.588 CiteScore 4.21
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.065 SNIP 2.307 CiteScore 3.62
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.225 SNIP 3.1 CiteScore 3.61
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Calibration of a distributed hydrology and land surface model using energy flux measurements

In this study we develop and test a calibration approach on a spatially distributed groundwater-surface water catchment model (MIKE SHE) coupled to a land surface model component with particular focus on the water and energy fluxes. The model is calibrated against time series of eddy flux measurements from three sites of different land surface type (agriculture, forest and meadow) and river discharge data from the 2500 km² Skjern River catchment in Denmark. The approach includes initial calibrations of three one-dimensional models representing the three land surface types using the...
flux measurements for calibration. This step provides initial values for the subsequent modelling and calibration at catchment scale. To test the validity of the approach, two additional catchment scale distributed simulations were performed with no calibration and only calibration of the one-dimensional models, respectively. In addition, a subsequent validation period was simulated. A mean energy closure imbalance of 20% was seen for the three sites. For the distributed simulations, the energy imbalance was accounted for by two energy balance closure hypotheses ascribing the error to either energy fluxes or net radiation. In general, the distributed calibration approach improved model results substantially compared to using default values (no calibration) or calibration of the one-dimensional models only. For the distributed model simulations, the assumption regarding the energy balance closure had a substantial impact on the parameter sensitivities and on the simulated discharge and energy balance. During calibration, the simulation with corrected energy fluxes showed better performance on discharge than the simulation with corrected net radiation whereas the reverse was true for the validation period. Regarding energy fluxes, the simulation with corrected net radiation was superior in both the calibration and validation period.

General information
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Organisations: Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis, University of Copenhagen, Geological Survey of Denmark and Greenland, DHI Denmark
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Web of Science (2016): Indexed yes
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Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.048 SNIP 1.907 CiteScore 4.31
Web of Science (2014): Indexed yes
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Scopus rating (2010): SJR 1.889 SNIP 1.63
Web of Science (2010): Indexed yes
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Scopus rating (2009): SJR 1.994 SNIP 1.835
BFI (2008): BFI-level 2
The future learning environments are not based on standardized design solutions like lecture theatres for 100 persons or classrooms for 40 persons. As new technology and new ways of studying are being developed new demands are put on university environments. At the same time utilisation of resources in form of both teachers and university facilities is challenged by development of integration of learning, teaching and the spaces where it takes place. The challenges are shared among users and owners of campus, where retrofitting is needed too. This paper aims to describe Campus Retrofitting (CARE)- methodology for user-centric and co-creative campus retrofitting processes. The campus development research in Nordic countries and co-creation in retrofitting processes are discussed. The campus retrofitting cases in different countries are described by emphasising especially the methods they used. Based on the analysis of the methods the framework for Campus retrofitting (CARE) - methodology is presented and discussed. CARE-methodology is a tool to capture new logic to learning environment design. It has three key activities: co-creating, co-financing and co-evaluating. The integrated methodology and the formulation of the guiding principle of the CARE-way of sustainable retrofitting of university campuses opens up an agenda for investigating a new methodology for sustainable urban retrofitting in a Nordic context.
Carbono Cero América Latina - Una vía para la descarbonización neta de la economía regional para mediados de este siglo: Documento de visión
El objetivo del análisis presentado en este informe es identificar una vía para la descarbonización completa de la economía regional de América Latina y el Caribe (ALC) para mediados de este siglo. Esto se logra a través de una revisión de acciones sectoriales específicas dentro de un contexto tecnológico y económico previsible. El análisis se lleva a cabo en un momento de considerable discusión del problema del cambio climático a nivel mundial y después de una década de notable progreso socioeconómico a nivel regional. En el informe también se discuten las principales barreras que tienen que ser tratadas.

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Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Vergara, W. (Ekstern), Fenhann, J. V. (Intern), Schletz, M. C. (Intern)
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Cash flow analysis of past RES auctions

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Organisations: Department of Management Engineering, Energy Economics and Regulation
Authors: Kitzing, L. (Intern), Wendring, P. (Intern)
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Causal Analysis of Railway Running Delays
Operating delays and network propagation are inherent characteristics of railway operations. These are traditionally reduced by provision of time supplements or “slack” in railway timetables and operating plans. Supplement allocation policies must trade off reliability in the service commitments against service transit times and railway asset productivity. Methods to investigate the quality of supplement time allocation are necessary to reduce the behavioral response and the waste of resources. This is a preliminary study that investigates train delay data from the year 2014 supplied by Rail Net Denmark (the Danish infrastructure manager). The statistical analysis of the data identifies the minimum running times and the scheduled running time supplements and investigates the evolution of train delays along given train paths. An improved allocation of time supplements would result in smaller overall aggregate timetable supplement, reduced transport travel times, and higher productive utilization of train rolling stock. The study results will lead eventually to both better allocation of time supplements in timetable structures, and identification of areas that should be a high priority for correction.

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Organisations: Traffic modelling and planning, Department of Management Engineering, Department of Transport, Management Science, Department of Applied Mathematics and Computer Science, Statistics and Data Analysis
Centralisering af FM organisationer

Centralisering af FM organisationer kan let føre til mange frustrerende arbejdsdage for medarbejdere og deres ledere. Denne artikel giver et bud på hvad kommuner og andre kan gøre for at komme bedre igennem en omorganisering.

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Authors: Nielsen, S. B. (Intern)
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Centralizing municipal FM organisations: Danish experiences

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Organisations: Department of Management Engineering, Systems Analysis
Authors: Nielsen, S. B. (Intern)
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Centralizing Public FM organizations: Danish experiences with success criteria, results and realisation processes

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Authors: Nielsen, S. B. (Intern)
Number of pages: 11
Challenges in implementing a Planetary Boundaries based Life-Cycle Impact Assessment methodology

Impacts on the environment from human activities are now threatening to exceed thresholds for central Earth System processes, potentially moving the Earth System out of the Holocene state. To avoid such consequences, the concept of Planetary Boundaries was defined in 2009, and updated in 2015, for a number of processes which are essential for maintaining the Earth System in its present state. Life-Cycle Assessment was identified as a suitable tool for linking human activities to the Planetary Boundaries. However, to facilitate proper use of Life-Cycle Assessment for non-global environmental management based on the Planetary Boundaries, there is a need for linking non-global activities to impacts on a planetary level. In this study, challenges related to development and operationalization of a Planetary Boundary based Life-Cycle Impact Assessment method are identified and the feasibility of resolving the challenges and developing such methodology is discussed. The challenges are related to technical issues, i.e., modelling and including the Earth System processes and their control variables as impact categories in Life-Cycle Impact Assessment and to theoretical considerations with respect to the interpretation and use of Life-Cycle Assessment results in accordance with the Planetary Boundary framework. The identified challenges require additional research before a Planetary Boundaries based Life-Cycle Impact Assessment method can be developed. Research on modelling the impacts on Earth System processes and on allocation of and entitlement to the ‘safe operating space’ appear to be most urgent for operationalizing a Planetary Boundaries based Life-Cycle Impact Assessment method. The results of a Planetary Boundaries based Life-Cycle Impact Assessment would be highly relevant and could provide novel insights on the environmental performance and sustainability of products and systems.
Challenges in LCA modelling of multiple loops for aluminium cans

Life Cycle Assessment (LCA) has traditionally played a key role in identifying the most efficient environmental design strategies and the best option for the end-of-life of products from an environmental point of view, within "one life cycle" approach. However, such an approach fails to capture one of the main features of circular product systems, i.e. the need to model multiple life cycles. There are some key methodological challenges that LCA has to face in order to exploit its potential in a circular economy framework, e.g. how to model the recycling of materials in multiple loops. We considered the case of closed-loop recycling for aluminium cans, where body and lid are different alloys, and discussed the abovementioned challenge. The Life Cycle Inventory (LCI) modelling of aluminium processes is traditionally based on a pure aluminium flow, therefore neglecting the presence of alloying elements. We included the effect of alloying elements on the LCA modelling of aluminium can recycling. First, we performed a mass balance of the main alloying elements (Mn, Fe, Si, Cu) in aluminium can recycling at increasing levels of recycling rate. The analysis distinguished between different aluminium packaging scrap sources (i.e. used beverage can and mixed aluminium packaging) to understand the limiting factors for multiple loop aluminium can recycling. Secondly, we performed a comparative LCA of aluminium can production and recycling in multiple loops considering the two aluminium packaging scrap sources. The results from the mass balance of the alloying elements showed that the limiting alloying element for continuous can-to-can recycling is Mn.
Therefore we quantified the amount of Mn and primary Al that needs to be reintegrated in each scenario according to the recycling rate and used this information to perform an LCA of 30 recycling loops based on the actual alloy composition. From the comparative LCA the closed product loop option (i.e. using used beverage can scraps) turned out to have lower environmental impact than the open loop option (i.e. using mixed aluminium packaging scraps), at least with regard to climate change.

**Characterizing Design Process Interfaces as Organization Networks: Insights for Engineering Systems Management**

The engineering design literature has provided guidance on how to identify and analyze design activities and their information dependencies. However, a systematic characterization of process interfaces between engineering design activities is missing, and the impact of structural and compositional aspects of interfaces on process performance is unclear. To fill these gaps, we propose a new approach that characterizes process interfaces as organization networks consisting of people and their interactions when performing interfacing activities. Furthermore, we provide guidance on how to test and interpret the effect of those characteristics on interface problems. As a result, we show how structural and compositional aspects of the organization networks between information-dependent activities provide valuable insights to better manage complex engineering design processes. The proposed approach is applied to the development of a power plant, analyzing 79 process interfaces. The study reveals a relationship between the structure and composition of the process interfaces and reported interface problems. Implications of this approach include the integration of information about process and organization architectures, the systematic identification of key performance metrics associated with interface problems, and improved support for engineering managers by means of a better overview of information flows between activities.
Characterizing health impacts from indoor and outdoor exposure to fine particulates

Exposure to fine particulate matter (PM2.5) pollution is a major contributor to human disease burden as continuously shown in the Global Burden of Disease study series. Exposures to PM2.5 concentration outdoors and indoors contribute almost equally to this burden. Despite the importance, health impacts from exposure to PM2.5 are often excluded from life cycle impact assessment (LCIA) characterization profiles. This is in large part because of the lack of well-vetted harmonized guidance about how to consistently assess the exposures and impacts of indoor and outdoor emissions of PM2.5 and its precursors. We present a framework for calculating characterization factors for indoor and outdoor emissions of primary PM2.5 and secondary PM2.5 precursors, and a roadmap for further refining this modelling framework for operational use in LCIA. The framework was developed over the last three years by a task force convened under SETAC/UNEP auspices. A recent SETAC Pellston Workshop® was convened to formalize guidance and methods for estimating the health impacts associated with PM2.5 exposure and to recommend PM2.5 characterization factors for application in life cycle assessment. The framework involves three stages—analyzing PM2.5 fate and exposure (including indoor and outdoor urban/rural environments), modeling exposure-response, and the integration of exposure-response and PM2.5 exposure reflecting population and location characteristics. Our exposure model is organized as a mass balance matrix that tracks the global fate of primary PM2.5 and secondary PM2.5 precursor emissions (both indoors and outdoors) as an embedded system of compartments including urban environments, rural environments, and indoor environments within urban and rural areas. After presenting the model structure, we will review initial results and will present geographic variability, discuss key uncertainties, and evaluate our model using results from other models and concentration measurements.
Circular economy: To be or not to be in a closed product loop? A Life Cycle Assessment of aluminium cans with inclusion of alloying elements

Packaging, representing the second largest source of aluminium scrap at global level, deserves a key role in the transition towards the circular economy. Life Cycle Assessment (LCA) of aluminium products has been typically based on one life cycle considering pure aluminium flows and neglecting the presence of alloying elements and impurities. However, this simplification undermines the potentials of using LCA to quantify the environmental performances of products in multiple loops, as required in the circular economy. This study aims to investigate the effects of including the actual alloy composition in the LCA of aluminium can production and recycling, in order to understand whether a can-to-can (i.e. closed product loop) recycling should be promoted or not. Mass balance of the main alloying elements (Mn, Si, Cu, Fe) was carried out at increasing levels of recycling rate, corresponding to a temporal interval of five years. Different aluminium packaging scrap sources were considered: mixed packaging aluminium scrap and used beverage can scrap. The outcomes of the mass balance were used to quantify the amount of Mn and primary Al that needs to be reintegrated in each scenario according to the recycling rate and this information was further used to perform an LCA of 30 loops of
aluminium can production and recycling, based on the actual alloy composition. The LCA revealed that the closed product loop option (considering used beverage can scrap) has lower climate change impacts over the other recycling scenario using mixed Al packaging scrap. The main recommendation from an LCA methodological point of view is to include the idea of multiple co-functions in the functional unit definition. To further improve the environmental performances of the aluminium beverage can sector towards circular economy implementation the key actions are: to reduce the weight of the lid, to develop methods to separate the body and lid at the point of collection, and to investigate the potentials of a closed supply chain loop for aluminium cans in terms of combined environmental and economic value creation.
City-based Carbon Budgets for Buildings

The construction of buildings consumes about 50% of all materials produced globally measured by weight. Materials such as cement, ceramic tile and steel are among the most carbon intensive materials to manufacture, and come with a carbon footprint of their own. This is called embodied carbon. Accounting for embodied carbon is a different way of visualizing the emission effect of the consumer rather than the generator of emissions. Bringing the consumer, and the related production value chains, into play can engage powerful market drivers in the combat against GHG emissions. The building sector,
with its vast resource consumption, is the ideal place to start. This working paper provides concrete ideas on how to proceed. Currently, there is scant regulation addressing embodied carbon. Cities have great potential influence over the construction industry, as nearly all construction of buildings requires city government approval. Energy efficiency is the usual focus, though recent policy development regarding embodied carbon emissions in buildings has been observed in a number of cities and countries. Moreover, industry has been pushing the development of standards for calculation and reporting of embodied carbon in buildings. Embodied carbon is also addressed by several green building certification schemes. The development, however, needs to speed up. The construction sector and cities together are ideally positioned to establish a local up-scalable regime that will curb greenhouse gas emissions from within. This working paper suggests concretely how to design and implement a model in which cities use existing construction approval processes to allocate a carbon budget that combines emissions from operational and embodied carbon - and make usage permits for buildings constructed under this restriction contingent upon documented compliance - leaving it up to the sector itself to document its carbon footprint. A parallel is drawn to the dissemination of ISO standards 9001 and 14001, where quality and environmental demands from decisive commercial actors spread through the supply chain. The paper explores principles and specific limits regarding e.g. calculation of the carbon budget over time and the method of budget allocation in order to repeat this experience with the purpose of emissions reduction. The working paper also reveals that cities have a firm ground to stand on and that in curbing emissions through carbon budgets for construction they would act in their own self-interest. Adopting the model they would and will ultimately deliver a ground breaking initiative for cutting global emissions at scale – beyond that of the construction sector. If the ISO experience has any merit, it suggests less than a decade for the effects of carbon budgets to show themselves.

**Climate Change Adaptation and Mitigation in Ecosystems - Benefits, Barriers and Decision-Making**

Ecosystems are central to the livelihoods of many people and at the same time highly vulnerable to climate change. This research, which focuses on ecosystems and land use, investigates how households dependent on ecosystems can benefit from climate change adaptation and mitigation. Adaptation and mitigation are two different approaches to minimising the impact and extent of climate change. The possible synergy between adaptation and mitigation is a topic that is currently attracting increasing attention, but which remains relatively understudied in the academic literature. The thesis consists of four peer-reviewed papers, each of which considers a subject that contributes with increased knowledge as to how decision-makers prioritise their choices to fight climate change, to maximise welfare and to secure better decisions when facing uncertainty and incomplete information.

Paper 1 Joint Adaptation and Mitigation in Agriculture and Forestry takes a general approach to synergies and trade-offs between adaptation and mitigation of climate change within forestry and agriculture in developing countries and considers previous experiences described in the literature. The paper offers a summary of the described barriers and opportunities for achieving synergy. This is treated in more detail in each of the following papers:

-Empirical welfare economic benefits of climate change adaptation leading to mitigation (Paper 2. Estimating the Benefits of the Interrelationship Between Climate Change Adaptation and Mitigation – A Case Study of Replanting Mangrove Forests in Cambodia)

-Choice of coping strategy when rural households dependent on agricultural production experience substantial, unexpected shocks (Paper 3. Empirically Based Analysis of Households Coping with Unexpected Shocks in the Central Himalayas)

-Simulation of decision and reaction patterns in relation to the belief in future climate changes and trajectory of decisions when knowledge about future climate is gradually increased (Paper 4. Simulation of Optimal Decision-Making under the Impacts of Climate Change)
Overall, the PhD thesis concludes that the opportunities to achieve synergies between adaptation and mitigation of climate change are good, especially from a landscape perspective. Paper 1 concludes that there is a need for more empirical knowledge on synergy, cost-efficiency, risk and uncertainty as well as the complexity of combining adaptation and mitigation. Joint adaptation and mitigation hold significant advantages especially from a landscape perspective.

Paper 2 considers such empirical knowledge and suggests how incentives to increase adaptation action can be achieved through carbon payments and a carbon credit scheme. Paper 2 highlights the importance of considering the strategies and options for tackling climate change, and how these may change over time. An important aspect hereof is the freedom of action and possible choices by those who feel the impact of climate change. There is great uncertainty about the scale which increases the uncertainty about the actual benefits of adaptation and mitigation of climate change and complicates the process of deciding how to act.

Paper 3 provides a more in-depth empirical analysis of actual decision-making, considering rural Nepalese households dependent on agricultural production. Paper 3 finds that households that experience substantial, unexpected shocks choose coping strategies that give them access to cash to overcome the shocks. Paper 4 exemplifies how freedom of action and optimal decisions can change over time, as knowledge increases.

A policy recommendation of the PhD thesis is that when striving to achieve synergies between climate change adaptation and mitigation it is necessary to understand that those who are hit the hardest typically are those with the least resources. Thus, these people have limited resources and freedom of action to manage possible crises and do not have resources to consider long-term strategies. This underlines the importance of linking development with the fight against climate change in order to secure increased freedom of action for the world’s poorest, thereby increasing their ability to adapt and make optimal decisions for the future. Because climate change is a global issue, mitigation should be included in decisions to maximise global welfare and the PhD thesis exemplifies situation of this.

General information
State: Published
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Relations
Projects:
Climate Change Adaptation and Mitigation in Ecosystems - Benefits, Barriers and Decision-Making
Publication: Research › Ph.D. thesis – Annual report year: 2017

Climate change impacts on groundwater hydrology – where are the main uncertainties and can they be reduced?
This paper assesses how various sources of uncertainty propagate through the uncertainty cascade from emission scenarios through climate models and hydrological models to impacts with particular focus on groundwater aspects for a number of coordinated studies in Denmark. We find results similar to surface water studies showing that climate model uncertainty dominates for projections of climate change impacts on streamflow and groundwater heads. However, we find uncertainties related to geological conceptualisation and hydrological model discretisation to be dominating for projections of well field capture zones, while the climate model uncertainty here is of minor importance. The perspectives of reducing the uncertainties on climate change impact projections related to groundwater are discussed with particular focus on the potentials for reducing climate model biases through use of fully coupled climate-hydrology models.

General information
State: Published
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Pages: 2312-2324
Climate Change Risks – Methodological Framework and Case Study of Damages from Extreme Events in Cambodia

Climate change imposes some special risks on Least Developed Countries, and the chapter presents a methodological framework, which can be used to assess the impacts of key assumptions related to damage costs, risks and equity implications on current and future generations. The methodological framework is applied to a case study of severe storms in Cambodia based on statistical information on past storm events including information about buildings damaged and victims. Despite there is limited data available on the probability of severe storm events under climate change as well on the actual damage costs associated with the events in the case of Cambodia, we are using the past storm events as proxy data in a sensitivity analysis. It is here demonstrated how key assumptions on future climate change, income levels of victims, and income distribution over time, reflected in discount rates, affect damage estimates and thereby the economic recommendations for climate change adaptation decision making. The conclusion is that taken vulnerabilities and equity concerns into consideration in adaptation planning for Least Developed Countries really makes a strong case for allocating economic resources to the protection of these countries.

General information
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Pages: 71-85
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ISBN (Print): 978-4-431-55077-8
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Climate change risks, Least developed countries, Cambodia, Damage costs, Equity
Publication: Research - peer-review › Book chapter – Annual report year: 2016

Closing the gap? Top-down versus bottom-up projections of China's regional energy use and CO2 emissions

As the world's largest CO2 emitter, China is a prominent case study for scenario analysis. This study uses two newly developed global top-down and bottom-up models with a regional China focus to compare China's future energy and CO2 emission pathways toward 2050. By harmonizing the economic and demographic trends as well as a carbon tax pathway, we explore how both models respond to these identical exogenous inputs. Then a soft-linking methodology is applied to "narrow the gap" between the results computed by these models. We find for example that without soft-linking, China's baseline CO2 emissions might range from 15-20Gt in 2050, while soft-linking models results in 17Gt. Reasons for the results gap between the models are discussed subsequently, such as model structure and statistical inputs. At a sectoral level, the gap can be mainly traced to China's future coal use in electricity production. The study finds that it is beneficial to soft-link complex global models under harmonized assumptions. Although this study fails to "close the gap" between the two models completely, the experiences and insights shared here will be beneficial for researchers and policy makers that are drawing conclusions from the results of China and global scenario studies.

General information
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Pages: 1355–1373
Publication date: 2016
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
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Web of Science (2017): Indexed yes
Closing the Loop for Aluminium Cans: Life Cycle Assessment of progression in Cradle-to-Cradle certification levels

Despite their different scopes, both the Life Cycle Assessment (LCA) methodology and the Cradle to Cradle (C2C) Certified™ Product Standard can support companies in the implementation of circular economy strategies. Considering the case of aluminum cans, the objectives of this paper are twofold: (i) to compare the environmental impact associated with different levels of two C2C certification requirements by using LCA; and (ii) to identify the main challenges and
drawbacks in the combined use of LCA and C2C for packaging within the circular economy framework. Twenty different scenarios were developed and compared, according to three C2C certification levels, in terms of % renewable energy and % recycled content. The results show that increasing the recycled content provides more improvements to environmental impacts than increasing renewable energy usage. Furthermore, receiving a higher certification level does not necessarily mean environmental burden reduction in LCA sense. From a methodological point of view, the main challenge for LCA is to address the continuous loop of materials and account for the benefits from recycling in a consistent way. Meanwhile for C2C the challenge is to guarantee a proper translation of the C2C principles into the C2C certification program, avoiding burden shifting and to find a balance between the different certification requirements.

General information
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Web of Science (2017): Indexed yes
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Scopus rating (2016): CiteScore 5.83 SJR 1.615 SNIP 2.382
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Scopus rating (2014): SJR 1.661 SNIP 2.477 CiteScore 4.6
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.644 SNIP 2.581 CiteScore 4.47
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Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.706 SNIP 2.328 CiteScore 4.07
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Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.461 SNIP 1.825 CiteScore 3.19
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BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.419 SNIP 1.742
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.942 SNIP 1.544
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.813 SNIP 1.354
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.942 SNIP 1.489
Combined nutritional and environmental life cycle assessment of fruits and vegetables

Nutritional health effects from the ‘use stage’ of the life cycle of food products can be substantial, especially for fruits and vegetables. To assess potential one-serving increases in fruit and vegetable consumption in Europe, we employ the Combined Nutritional and Environmental LCA (CONE-LCA) framework that compares environmental and nutritional effects of foods in a common end-point metric, Disability Adjusted Life Years (DALY). In the assessment, environmental health impact categories include greenhouse gases, particulate matter (PM), and pesticide residues on fruits and vegetables, while for nutrition we consider all health outcomes associated with fruit and vegetable consumption based on epidemiological studies from the global burden of disease (GBD). Findings suggest that one fruit/vegetable serving increase may lead to substantial nutritional health benefits even when considering uncertainty; 35 μDALY/serving fruit benefit compared to a factor 10 lower impact. Replacing detrimental foods, such as trans-fat and red meat, with fruits or vegetables further enhances health benefit. This study illustrates the importance of considering nutritional effects in food-LCA.
Comparative environmental and economic assessment of production, use and recycling of aluminium cans: Bologna vs Copenhagen

Circularity strategies need to be assessed both in terms of environmental and economic impacts, by performing full chain analysis, including the perspectives of producers, users and waste management operators. This study considered two different aluminium beverage can systems: Bologna and Copenhagen. We performed a combined Life Cycle Assessment (LCA) and Life Cycle Costing (LCC) analysis of the purchasing, production and waste management of beer aluminium cans, with the aim to compare the environmental and economic performances of the two systems and to identify potential misalignment in the integrated LCA-LCC analysis. The comparative analysis of aluminium cans production, use, collection and recycling in the two systems showed that the best option from an environmental point of view is also leading to higher costs and trade-offs need to be considered in the decision making process.
Comparison of auctions and alternative policy options for RES-E support

This report concludes the work carried out in the course of Task 6.2 of the AURES project. It is its aim to compare auctions with alternative policy instruments and in particular, to examine under which circumstances auctions may be superior and inferior to achieve intended policy targets. For that purpose, we identify a number of potential drivers that might affect an instrument’s effectiveness, its efficiency and further success criteria. Among this list of relevant drivers, the basis for our analysis is the factor risk, where our core focus is on risk for policy makers. Assuming a world of uncertainty, particularly policy makers or regulators are exposed to the risk of setting inefficient investment incentives by implementation of wrong policy. As such, the aspect of risk is deemed one of the most important challenges for the deployment of RES. We demonstrate that risk and uncertainty respectively constitute important factors understanding the decision-making of policy makers regarding which instrument to use. However, we also point out that independent of its importance, the factor risk constitutes only one of many factors, which may be relevant when selecting a policy instrument.

Our main analysis consists of two parts: First, we conduct a theoretical analysis, which summarises the insights gathered by Weitzman (1974). It illustrates that with uncertainty regarding the marginal costs and marginal benefits of RES, particularly the choice between price (e.g. a FIT) and quantity (e.g. an auction) instruments will be decisive, since incorrect price or quota signals may have different effects. In essence, while price schemes may reduce the risk of welfare losses given a relatively steep marginal cost and a comparably flat marginal benefit curve, a quantity scheme may be superior if the relation between the two curves is vice versa.

In the second part of our analysis, we employ modelled data by Held (2010) in order to build on the theoretical insights and compare the slopes of real marginal cost of RES in different European countries. Our main conclusions can be summarised as follows:

1. The incentives for the use of particular policy instruments to support the deployment of RES are both country and technology specific. In general, it appears that the incentive to employ a quantity-based mean such as an auction is larger when the natural resources of the technology that is to be supported are abundant and if that technology is rather well developed. Besides that, it requires a competitive market for an auction to be effective.

2. Since within a country the market and natural conditions of the different RES technologies and hence their supply costs may vary considerably, it seems possible that there exist incentives for both price and quantity support schemes. Our findings therefore provide an argument against a technologyneutral support.

3. Our analysis stresses the importance to consider temporal developments. Since both the potentials and the costs of the different RES technologies will change over time, so may the incentives for their support. It is therefore not only necessary to conduct a static assessment of RES potentials and their costs respectively but also to consider their dynamics.

Our findings suggest that with uncertainty regarding the marginal costs and marginal benefits of RES, there may be valid reasons for policy makers not to employ auctions, since under particular circumstances it may be desirable not to control quantities but the price. As such, they raise the question whether pure support cost minimisation should be the only goal when implementing regulatory policies. Our report develops useful insights, which may serve to argue for exceptional cases towards the European Commission. Moreover, it provides guidance to policy makers by indicating how to conduct similar yet case specific analyses.

General information
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inserts is significantly shorter than the life time of traditional brass, aluminium, or steel inserts, multiple inserts might be
needed to produce a large number of parts.
In an ongoing study, a simplified Life Cycle Assessment has been carried out in order to provide information on how the
four alternative insert materials perform in comparison in terms of their potential environmental impact and yield
throughout the development and pilot phase. Insert geometry is particularly advantageous for pilot production and small
production sizes.
In this research, Life Cycle Assessment is used to compare the environmental impact of soft tooling by Additive
Manufacturing (using Digital Light Processing) and three traditional methods for the manufacture of inserts (milling of
brass, steel, and aluminium) for injection moulds during the pre-production phase.

General information
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Compatibility of the SE4ALL Energy Efficiency Objective with Renewable Energy, Energy Access, and Climate Mitigation
Targets
The objectives of the Sustainable Energy for All (SE4ALL), a United Nations (UN) global initiative, are to achieve, by 2030:
1) universal access to modern energy services; 2) a doubling of the global rate of improvement in energy efficiency; and 3) a
doubling of the share of renewable energy in the global energy mix (United Nations, 2011; SE4ALL, 2013a). The
purpose of this study is to determine to what extent the energy efficiency objective supports the other two objectives, and
to what extent the SE4ALL objectives support the climate target of limiting the global mean temperature increase to 2°C
over pre-industrial times. To accomplish this, pathways are constructed for each objective, which then form the basis for a
scenario analysis using the Energy Technology System Analysis Program TIMES Integrated Assessment Model (ETSAP-
TIAM). We find that, in general, the energy efficiency objective is reinforced by the renewable energy objective, but not by
the universal access objective. Achieving the energy efficiency objective is made cheaper (in terms of the net present
value of investment costs) when the renewable energy target is also achieved. However, achieving both the renewable
energy and energy efficiency targets require more investment than achieving the renewable energy objective alone.
Furthermore, we find that the universal access objective requires much more investment in the residential sectors of
developing regions of the world, and makes the meeting the other two objectives more expensive. Meeting any of the
objectives also requires increased investment in the transportation sector. While achieving the SE4ALL objectives does
not limit warming to 2°C on its own, it makes a substantial contribution toward that goal, particularly if the renewable
energy and energy efficiency objectives are met.

General information
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Source: PublicationPreSubmission
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Comprehensive assessment of fruits and vegetables human health effects in a LCA context

Nutritional effects from the 'use stage' of food items life cycle can have a substantial effect on human health; yet, they are often not considered in life cycle assessment (LCA). In our study we explore the case of increased fruit and vegetable consumption, a healthy dietary option – that could result in higher exposures to a wide variety of pesticides – and investigate the trade-offs between associated environmental and nutritional health effects. Methods: We employ the Combined Nutritional and Environmental Life Cycle Assessment (CONELCA) framework that evaluates and compares in parallel the environmental and nutritional effects of foods expressed in Disability Adjusted Life Years (DALYs). For the environmental health assessment we consider impact categories such as global warming and particulate matter (PM) as well as chemical exposure due to pesticide residues. Global warming and PM are assessed following a traditional LCA approach. For the pesticide residue exposure, we use publically available health impact scores derived from toxicological studies of numerous pesticide active ingredients. For the nutritional assessment we focus on the various health outcomes considered in the global burden of disease that are based on epidemiological studies. Results and discussion: Adding one serving of fruits or vegetables to the current average diet in Europe may lead to substantial nutritional health benefits. These nutritional benefits are slightly increased when we consider substitution scenarios in which the substituted food items are associated with negative health effects, such as red meat and trans-fat. Overall environmental health impacts associated with this addition are substantially smaller compared to nutritional benefits in each scenario, even when considering an uncertainty factor of 400 for the impacts of pesticide residues. Conclusion: The present study illustrates the importance of considering nutritional effects of food items in LCA. Our preliminary results suggest that nutritional health effects of food items can be substantial and comparable to environmental impacts, especially for nutritional foods such as fruits and vegetables. This approach could be used for making recommendations about sustainable diets and food choices.

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Publication date: 2016

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Title of host publication: SETAC Europe 26th Annual Meeting: Environmental contaminants from land to sea: continuities and interface in environmental toxicology and chemistry
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Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2016

Conceptualising sustainable low carbon urban transport in India

General information
State: Published
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Number of pages: 5
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Consumer Behavior towards Scheduling and Pricing of Electric Cars Recharging: Theoretical and Experimental Analysis

This article-based dissertation consists of five self-contained chapters. The first chapter presents the motivation of the dissertation and a summary of the four papers contenting the dissertation. Three of the chapters are applied microeconomics papers dealing with the economics of recharging electric cars. The last chapter deals with analysis of energy consumption rate and its determinants of electric cars under the hands of customers. A variety of techniques are used including analysis of field data, economics laboratory experiments and theoretical modeling with simulation.

Chapter one presents an introduction to the main parts of the dissertation and a summary of the articles contenting the dissertation.

Chapter two, 'The Economics of Workplace Recharging', proposes a microeconomic model of the demand for and supply of recharging facility at workplace (WPC), and uses the approach to shed light on the incentives and barriers employees and employers face when deciding on the demand for and supply of WPC. Using the model and simulation, the paper also examines the existence of WPC market under the current prices, and finds that no WPC contract exists that an employer is willing to offer and, at the same time, that the majority of employees are willing to accept. To overcome the lack of
demand for or under-provision of workplace recharging, various remedies are discussed and suggested.

Chapter three, ‘Myopic Loss Aversion Behavior under Ultimatum Game Framework in the Scheduling and Pricing of Electric Vehicle Recharging’, proposes, and tests at laboratory, contracts about recharging BEVs combining the ultimatum game framework and the myopic loss aversion (MLA) behavioral hypothesis. The model represents the behavior of EV-owners trading-off between the amount of the discount on fee for postponing recharging, the risk of being eligible to the discount and the risk of not recharging the BEV on time for unforeseen trips. Findings from the experiment show that indeed individuals perform decisions exhibiting MLA behavior. The intuition from the result is that presenting time-of-use recharging price as long-term contracts may curtail MLA behavior and help BEV owners to choose cost minimizing recharging time and, simultaneously, may help to reduce BEVs impact on the electricity grid system.

The fourth chapter, ‘Using the Peer Effect in Scheduling and Pricing Electric Vehicles Recharging: Laboratory Evidence about Peer Effect in Risk-Taking’, presents experimental evidence about peer effect in risk taking in general and, in particular, the use of peer effect in scheduling BEVs recharging. The study investigates whether individuals want to see the choices of others, if observing peers’ choices influences the observers’ choices, to what extent the peer effect is pervasive and who are being influenced by peers’ choices as well as the role the type of peer information plays on peer effects. The results show that a lion share of individuals want to see peers’ choices, but only a moderate percentage of them, mostly those with relatively lower scores in our math test (usually used to test cognitive ability) and lacking self-confidence, use the peers’ choices to revise their intrinsic choices. The results reveal also that the type of peer information plays a significant role in peer effects.

The fifth chapter, ‘Harnessing Big-Data for Estimating the Energy Consumption and Driving Range of Electric Vehicles’, analyzes the electricity consumption of BEVs and its sensitivity to the various driving environments in the hands of customers. The results show that the energy consumption rate of BEVs is highly sensitive to weather conditions and to driving styles. The results may help individuals to make informed decisions about BEV choice, manufacturers to build trust with customers by provide more accurate information, and governments to design policies based on reliable information.
Contribution of waterborne nitrogen emissions to hypoxia-driven marine eutrophication: modelling of damage to ecosystems in life cycle impact assessment (LCIA)

Marine eutrophication refers to the ecosystem response to the loading of a growth limiting nutrient, typically nitrogen (N), to coastal waters, where it may cause several impacts. One of the possible impact pathways to these impacts involves the excessive depletion of dissolved oxygen (hypoxia) in bottom waters. Hypoxia is identified as an important and widespread cause of disturbance to marine ecosystems and has been linked to the increasing anthropogenic pressure. This is driven by environmental emissions of reactive nitrogen, mainly from N-containing fertilizers used in agriculture and atmospheric deposition as a consequence of fossil fuels combustion.

General information
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Control and trust impact on outsourcing
This paper examines the relationships between control, trust and inter-organizational learning in outsourcing relationships, focusing on the question: How do different trust and control strategies affect the sharing and withholding of knowledge between client and vendor? Four studies are conducted; one, large international client company and three of its vendors. Based on these cases and a literature review, various trust and control strategies are examined, and factors influencing the mutual knowledge interaction are identified. The results show an internal disagreement among managers in the client company similar to the general disagreement between proponents of cost transaction theory and relational exchange theory respectively. The vendors express no hesitation to withhold especially proactive knowledge of relevance for the client when they are dissatisfied by the information and/or trust level offered by the client. Implications for more optimal client vendor relationships are developed as well as suggestions for further research.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Operations Management, Technology and Innovation Management, Office for Study Programmes and Student Affairs
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Publication date: 2016
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017

Control Structures in supply chains as a way to manage unpredictable cyber-risks
Supply chain growth, and their dependence on Information Technology (IT), is making cyber risks an increasingly unmanageable threat through traditional risk assessment methods. Systemic analysis methods have been identified as alternatives to traditional methods. This paper analyzes the application of a systemic risk analysis methodology to understand cyber risks in the supply chain. A generic supply chain is analyzed, and information flows, dynamic structures and the influence of cyber-attack on these are identified. This paper argues that a systemic approach is more efficient in detecting vulnerabilities, enabling an evolving disruption response process and culture in the supply chain.

General information
State: Published
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Number of pages: 10
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COPE-SMARTER - A decision support system for analysing the challenges, opportunities and policy initiatives: A case study of electric commercial vehicles market diffusion in Denmark

Stakeholder's strategies in encouraging wide-scale market penetration depend on their perceptions. This study focuses on perceptions of Danish practitioners in policy-making organizations regarding the perceived challenges, opportunities and policy initiatives for the majority-market adoption of electric commercial vehicles (ECVs) in commercial sector in Denmark. We propose a new four-step expert-based technique, named COPE-SMARTER, for evaluating the market diffusion of environmental friendly technologies by combining SWOT analysis and multi-criteria decision analysis (MCDA) techniques. We focus on the perceptions regarding: (i) the potential promotional strength of motivators for ECV market penetration, (ii) the severity of the technological, financial, physical and operational challenges, (iii) the efficiency of policy initiatives in encouraging the market diffusion of ECVs, (iv) the expected market penetration rates for ECVs by target year. The results show the strength of the COPE-SMARTER approach in generating a clear, coherent, and tractable evaluation. Severe challenges are financial, operational and technological, with high purchase prices being by far the most severe. The opportunities are financial and environmental, with overall savings in the long-term as the opportunity with the highest promotional strength. Effective policy initiatives are low registration fee for ECVs, state subsidies for the purchase or use of ECVs, and emission-based taxes.
The recurring floods experienced in recent years by many urban centres in West Africa are not merely the consequence of global climate change. Large parts of the poor urban populations in West Africa often live in hazardous areas where urban planning is inadequate and where the public services, infrastructure and protective regulations that are needed in order to face flood issues are poorly provided. As a result, recurrent flooding reinforces existing social inequalities and the vulnerability of the urban poor. This does, however, not mean that the delivery of collective services related to flood response does not exist or that it is ungoverned. In order to cope with inefficient public service provision, the inhabitants often organize to ensure that flooding is addressed. This study shows that in Pikine, a city located at the outskirts of Dakar (Senegal), the governance of floods entails the daily coproduction of flood prevention and adaptation services, where users play an important and active role. The authors show that this ‘palliative governance’ has a direct impact on vulnerable populations’ capacity to cope with and adapt to recurrent flooding. The authors show that the informality that is essential to the coproduction of services should not be seen as an opposition to the State, but rather as essential to the daily functioning of the state, as well as a manifestation of ordinary citizenship by residents of deprived neighbourhoods.

Coproduire les services publics: Gouvernance palliative des inondations et citoyenneté en milieu périurbain à Pikine (Sénégal)

The recurring floods experienced in recent years by many urban centres in West Africa are not merely the consequence of global climate change. Large parts of the poor urban populations in West Africa often live in hazardous areas where urban planning is inadequate and where the public services, infrastructure and protective regulations that are needed in order to face flood issues are poorly provided. As a result, recurrent flooding reinforces existing social inequalities and the vulnerability of the urban poor. This does, however, not mean that the delivery of collective services related to flood response does not exist or that it is ungoverned. In order to cope with inefficient public service provision, the inhabitants often organize to ensure that flooding is addressed. This study shows that in Pikine, a city located at the outskirts of Dakar (Senegal), the governance of floods entails the daily coproduction of flood prevention and adaptation services, where users play an important and active role. The authors show that this ‘palliative governance’ has a direct impact on vulnerable populations’ capacity to cope with and adapt to recurrent flooding. The authors show that the informality that is essential to the coproduction of services should not be seen as an opposition to the State, but rather as essential to the daily functioning of the state, as well as a manifestation of ordinary citizenship by residents of deprived neighbourhoods.
Cost

Cost-benefit analysis of adaptation Investments for Flood Risk Management for Industrial Estates in Mumbai

Cost damping and functional form in transport models
Coupled near-field and far-field exposure assessment framework for chemicals in consumer products

Humans can be exposed to chemicals in consumer products through product use and environmental emissions over the product life cycle. Exposure pathways are often complex, where chemicals can transfer directly from products to humans during use or exchange between various indoor and outdoor compartments until sub-fractions reach humans. To consistently evaluate exposure pathways along product life cycles, a flexible mass balance-based assessment framework is presented structuring multimedia chemical transfers in a matrix of direct inter-compartmental transfer fractions. By matrix inversion, we quantify cumulative multimedia transfer fractions and exposure pathway-specific product intake fractions defined as chemical mass taken in by humans per unit mass of chemical in a product. Combining product intake fractions with chemical mass in the product yields intake estimates for use in life cycle impact assessment and chemical alternatives assessment, or daily intake doses for use in risk-based assessment and high-throughput screening. Two illustrative examples of chemicals used in personal care products and flooring materials demonstrate how this matrix-based framework offers a consistent and efficient way to rapidly compare exposure pathways for adult and child users and for the general population. This framework constitutes a user-friendly approach to develop, compare and interpret multiple human exposure scenarios in a coupled system of near-field ('user' environment), far-field and human intake compartments, and helps understand the contribution of individual pathways to overall human exposure in various product application contexts to inform decisions in different science-policy fields for which exposure quantification is relevant.

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, University of Michigan
Authors: Fantke, P. (Intern), Ernstoff, A. (Intern), Huang, L. (Ekstern), Csiszar, S. A. (Ekstern), Jolliet, O. (Ekstern)
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Critérios para recomendar modelos de caracterização de AICV no Brasil

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Cross-pollination in bioenergy: Innovation networks between the bioenergy and biotechnology in Denmark

**General information**

**State:** Published

**Organisations:** Department of Management Engineering, Technology and Innovation Management
Current and future prospects for heat recovery from waste in European district heating systems: A literature and data review

Municipal solid waste has seen increasing annual volumes for many decades in contemporary Europe and constitutes, if not properly managed, an environmental problem due to local pollution and greenhouse gas emissions. From an energy perspective, waste is also an alternative fuel for power and heat generation; energy recovery from waste represents an effective measure to reduce landfilling and avoid disposal emissions while simultaneously reducing the equivalent demand for primary energy supply. A key factor for obtaining the full synergetic benefits of this energy recovery is the presence of local heat distribution infrastructures, without which no large-scale recovery and utilisation of excess heat is possible. In this paper, which aims to estimate municipal solid waste volumes available for heat recovery in European district heating systems in 2030, a literature and data review is performed to establish and assess current and future EU (European Union) waste generation and management. Main conclusions are that more heat can be recovered from current Waste-to-Energy facilities operating at low average heat recovery efficiencies, that efficient incineration capacity is geographically concentrated, and that waste available for heat recovery in 2030 is equally determined by total generation volumes by this year as by future EU deployment levels of district heating.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Halmstad University
Authors: Persson, U. (Ekstern), Münster, M. (Intern)
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  Web of Science (2015): Indexed yes
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  Web of Science (2014): Indexed yes
  BFI (2013): BFI-level 2
Cycling in multimodal transport behaviours: Exploring modality styles in the Danish population

Multimodality is important for achieving less car dependent lifestyles and more sustainable transport behaviours. It is widely recognised that cycling plays a prominent role in sustainable transport. However, research has largely focused on cycling substituting motorised transport. This study explores how cycling forms part of multimodal transport behaviour based on survey data on transport modes and travel purposes and the weekly frequency of out-of-home activities and travel mode use in a representative sample of adult Danes (n = 1957). The following five distinct multimodal travel segments or 'modality styles' are identified: 'education transport'; 'public-based transport'; 'limited transport'; 'bicycle-based transport'; and 'car-based transport'. Travel behaviour is predominantly multimodal with few unimodal car-drivers being identified. Substantial cycling takes place in all modality styles, and is embedded in a multimodal behaviour as the modality style combined cycling with several other modes. Furthermore, the study demonstrates that cycling serves many purposes that transcend the division of utility cycling and recreational cycling, and that cycling takes place in both dense urban settings and small towns. Thus, the way in which travel modes relate to the urban environment and variations in modality styles must serve as the starting point for policies aiming to fulfil the potential of multimodal transport behaviour and promote cycling. (C) 2016 Elsevier Ltd. All rights reserved.
Danish Act on Processing of Personal Data, in a Smart Cities Research Perspective

The Danish act on processing of personal data influences what data can be processed for. Data has been collected with consent from the data subject for a specific purpose. Any other use of the data violates the purpose and requires new consent from each data subject. But the law does include some areas which are favorable for some position, science is one. This poster explains what the law says about processing data from a research point of view.

Decarbonising the Swedish transport sector with electricity or biofuels

Sweden has set long-term energy policy targets which aim at eliminating net greenhouse gas (GHG) emissions by 2050 [1]. Since the production of power and district heating in Sweden is already close to being carbon neutral, a further reduction of GHG emissions have to be sought in other sectors, for example the transport sector. By 2011, approximately 90% of the total fuel consumption in the transport sector stems from fossil fuels, accounting for around 45% of the GHG emissions in Sweden [1]. Therefore, the Swedish transport sector will have to face a major transformation in the next future, if the ambitious targets of a carbon neutral transport system by 2050 and of being independent from fossil fuels in the vehicle fleet by 2030 have to be achieved [1]. To meet the energy policy targets, radical restructuring of the fuel use and vehicle stock in the transport sector is required. In this context, this paper develops two alternative scenarios for the transport sector by 2050 – an Electric Vehicles Scenario (EVS) which include a high percentage of electric vehicles and a BIOfuel Scenario (BIOS) with a high percentage of biofuels. The scenario results are compared to the Carbon Neutral Scenario (CNS), adopted from the Nordic Energy Technology Perspective (NETP) 2013 [2]. The alternative scenarios for the transport sector are developed by means of an energy system model which includes the power, heat and transport sectors, taking into account possible synergies among the sectors. The energy system model computes the socio-economic value of the total annual system cost which then allows for a comparative analysis between the investigated scenarios.

Decision-support tools for climate change mitigation planning

This document describes three decision-support tools that can aid the process of planning climate change mitigation actions. The phrase ‘decision-support tools’ refers to science-based analytical procedures that facilitate the evaluation of
planning options (individually or compared to alternative options) against a particular evaluation criterion or set of criteria. Most often decision-support tools are applied with the help of purpose-designed software packages and drawing on specialised databases. The evaluation criteria alluded to above define and characterise each decision-support tool. For example, in the case of life-cycle analysis, the evaluation criterion entails that the impacts of interest are examined across the entire life-cycle of the product under study, from extraction of raw materials, to product disposal. Effectively, then, the choice of decision-support tool directs the analysis towards a specific type of decision criterion.

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Puig, D. (Intern), Aparcana Robles, S. R. (Intern)
Number of pages: 33
Publication date: 2016

Deconstructing the concept of renewable energy-based mini-grids for rural electrification in East Africa
The goal of providing universal energy access to all by 2030 under the UN-led SE4ALL initiative calls for new and innovative solutions to rural electrification and is fuelling the recent interest in mini-grids. Mini-grid solutions are emerging as a third alternative to rural electrification, coming between the option of large-scale grid extension and pico-scale stand-alone solutions like solar home systems or solar lanterns. International expectations of mini-grids are high, with the International Energy Agency suggesting that they will play a significant role in reaching the goal of universal access. Based on a detailed review of past, ongoing, and planned mini-grids in East Africa, this study seeks to deconstructs the popular notion of mini-grids for rural electrification in East Africa. The study reveals that so far activities carried out under the heading of mini-grids to a large extent consist of the hybridization of existing utility-owned electricity systems for medium-size towns located far from the grid, which does not necessarily contribute to rural electrification. However, limited but increasing activity is identified regarding the use of mini-grids to bring electricity to rural villages and smaller rural towns. This is of specific interest because it is for this type of mini-grid that the main challenges are to be found with respect to identifying and testing adequate financing, ownership, and business models. Based on the trajectories identified for mini-grids for rural electrification and the challenges identified in the literature, the study concludes by proposing three avenues for further research. For further resources related to this article, please visit the WIREs website.

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Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Pedersen, M. B. (Intern)
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Defining Interactions and Interfaces in Engineering Design

This PhD thesis focuses on the understanding and definition of interactions and interfaces during the architectural decomposition of complex, multi-technological products. The Interaction and Interface Framework developed in this PhD project contribute to the field of engineering design research.

Developing complex, multi-technological products involves the joint effort of multiple engineering disciplines in order to arrive at an end product, which satisfies its requirements. A major challenge is however the fact that bringing together engineers from different technical backgrounds means that they have different conceptual viewpoints on the product and use different ‘technical languages’ to communicate. Some terms like an interface, is used frequently in engineering however with no commonly declared meaning and is thus subject to much interpretation across engineering disciplines. It is well-known that most problems arise at the interfaces during product development, which is why there is a need for a rigorous and multi-disciplinary treatment of the concept of interfaces as well as interactions.

On the basis of a two-year case study at a medical device manufacturer, the role of interactions and interfaces in product family development has been investigated. The case study showed that for this particular case, interaction and interface descriptions represents the rationales needed to reuse documentation across multiple product variants. The interaction and interface descriptions thus become documents of legal matter and must therefore be unambiguously and completely described.

Following this observation, a comprehensive and systematic literature review has been performed in order to investigate the definition and perception of an interface. The review resulted in a classification revealing 13 dominant perceptions of what an interface is from an academic perspective including the observation of an apparent confusion between the terms interaction and interface. In addition, a case example of a solenoid valve was examined in order to reason out the likely causes of problems occurring at interfaces. The case example showed that interfaces that reside at the boundary between engineering disciplines are vulnerable to misinterpretation and rework.

Based on this understanding, this thesis presents a first principles, physics-based Interaction and Interface Framework, which provides a ‘common language’ across any engineering discipline for describing and communicating about interactions and interfaces in engineering design. The framework contains classifications of three key terms; interaction, interaction mechanism, and interface. Due to the first principles, physics-based approach to deriving the framework, it has been possible to arrive at a classification of interaction mechanism, which is mutually exclusive (no overlap) and collectively exhaustive (no gaps). This contribution changes the existing paradigm of reasoning about interactions and allows for an unambiguous architectural decomposition of a product.

The framework further proposes an 8-step architecting approach explicitly articulating how to systematically apply the framework top-down thus enabling complete and unambiguous descriptions of interactions and interfaces throughout the system. A tool called an Interaction Specification Wheel (ISW) is introduced to support consistency in writing requirements and specifications. All of the contributions have been evaluated in an initial test, which indicated a positive effect on their ability to capture interactions and unambiguously specify them. Further research is needed to obtain statistical significance. Future research may investigate how to incorporate the framework into practice and further evaluate the high level effects. This will most likely require two or more case studies in real-life projects.

General information
State: Published
Organisations: Engineering Design and Product Development, Department of Mechanical Engineering, Department of Management Engineering, Management Science, Radiometer Medical ApS
Authors: Parslov, J. F. (Intern), Mortensen, N. H. (Intern), Hvam, L. (Intern), Bysted, T. (Ekstern)
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This thesis focuses on the design of flexible multi-generation systems, which are dynamic and integrated energy conversion systems characterized by the ability to adjust operation in response to fluctuating operating conditions. It is the hypothesis that these systems may support the balancing of variable renewable energy sources in a cost-effective way by linking the different sectors in the energy system with local energy supply systems.

A key challenge faced in the development of flexible multi-generation systems is the knowledge gap between process design practices, which simplify energy system variations and dynamics, and energy system analysis, which fails to consider process integration synergies in local systems. The primary objective of the thesis is to derive a methodology for linking process design practices with energy system analysis for enabling coherent and holistic design optimization of flexible multi-generation systems.

A methodology is presented for optimizing the design of flexible multi-generation systems which considers: Selection, dimensioning, location and integration of processes; operation optimization with respect to both hourly variations in operating conditions as well as long term energy system development; biomass supply chains and local resource availability; combined with global sensitivity and uncertainty analysis. The methodology includes a novel method for aggregating external operating condition datasets, named the CHOP method. In addition, three case studies focusing on integrating biomass processing and energy conversion technologies in existing combined heat and power plants in Denmark are conducted using the developed methods.

The outcomes of this thesis indicate that the developed design methodology is efficient in screening for promising designs of flexible multi-generation systems. In addition, the case study results emphasize the importance of considering flexible operation, systematic process integration, and systematic assessment of uncertainties in the design optimization. It is recommended that future research focus on assessing system impacts from flexible multi-generation systems and performance improvements from storage options.
Designers as the Determinants of Aesthetic Innovations

Aesthetic innovations have become increasingly important appropriation mechanisms for firms. Since 2003, the number of design patent applications (to protect aesthetic innovations) has tripled compared to doubling in the numbers of both patent and trademark applications. However, despite the growing interest of firms in aesthetic innovations, knowledge on the determinants is limited. Work on labor mobility within the innovation studies literature focuses mainly on discussion of scientists as crucial for creating technological innovations. This paper adds to work on labor mobility and innovation by examining whether this holds in the case of designers’ mobility and aesthetic innovations. Does the hiring of a new designer generate more aesthetic innovations than in a matched firm, which does not hire a designer? What is the importance of prior experience with aesthetic innovation in the receiving firm for the firm's absorptive capacity linked to translating the hiring of a designer into aesthetic innovation? We use a unique dataset containing information on firms, their hiring of designers, and their aesthetic innovation activity measured by design applications (design patents). Our findings show that hiring a designer does increase the likelihood of producing an aesthetic innovation. Hence, designers are a determinant of aesthetic innovations. However, in order to benefit fully from hiring a designer the firm needs prior experience in aesthetic innovation.

Designer's Identity: Personal Attributes and Design Skills

A designer’s professional identity (DPI) develops through both education and professional experience, building on core personality traits and innate skills. In this paper a systematic literature review and a secondary narrative review were developed in order to map personal attributes and design skills that comprise the DPI. Just a few works in literature dealt with these two elements holistically. Thus, in order to address this gap a holistic understanding of these elements, in context, is proposed as a cohesive framework where a DPI can be described as it evolves over time.
for sustainability research, this article attempts to review the points of intersection between these two fields, and explores the potential that knowledge from project management literature has in improving efficiency and effectiveness of development and implementation of design for sustainability tools.

**General information**

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Norwegian University of Science and Technology
Authors: Ali, F. (Intern), Boks, C. (Ekstern), Bey, N. (Intern)
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**Designing an Africa-EU research and innovation collaboration platform on climate change**

Climate change is arguably the most significant of a set of interconnected global challenges threatening water resources and food security. In particular, the relationship between water resources, food systems and climate change is tightly coupled, and improved food security under climate change and climate variability scenarios requires globally coordinated actions for both technical and policy interventions to achieve greater resilience. Successful implementation of these actions requires a comprehensive scientific knowledge base delivered by extensive global collaboration, taking into account past and ongoing successful research and innovation initiatives. Diverse actors from all over the world—from corporations to governments and citizens—are increasingly recognising the urgent need to address climate change in their respective spheres of influence. This report is intended to contribute to making this process more effective by developing a proposition for a platform to strengthen Africa-EU research and innovation collaboration on climate change.

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Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Tostensen, A. (Ekstern), Monteverde Haakonsen, J. (Ekstern), Hughes, M. (Ekstern), Haselip, J. A. (Intern), Larsen, C. (Intern)
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Detection of icing on wind turbine blades by means of vibration and power curve analysis: Icing detection in wind turbines

Ice accretion on wind turbines' blades is one of the main challenges of systems installed in cold climate locations, resulting in power performance deterioration and excessive nacelle oscillation. In this work, consistent detection of icing events is achieved utilizing indications from the nacelle accelerometers and power performance analysis. Features extracted from these two techniques serve as inputs in a decision-making scheme, allowing early activation of de-icing systems or shut down of the wind turbine. An additional parameter is the month of operation, assuring consistent outcomes in both winter and summer seasons. The amplitude of lateral nacelle vibration at rotor speed is the used condition indicator from vibration standpoint, which is verified by the presence of sinusoidal shape in high-resolution time waveforms. Employment of k-nearest neighbour on wind speed - power production data sets leads to successful recognition of power performance deterioration. Results from one wind park consisting of 13 turbines operating under icing are presented, where similar patterns on both vibration and power curve data validate the effectiveness of the proposed approach on the reliable detection of icing formation.

General information
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Organisations: Department of Management Engineering, Department of Electrical Engineering, Center for Electric Power and Energy, Electric power components, Technical University of Denmark, Bruel and Kjaer Vibro A/S, University of the Faroe Islands
Authors: Skrimpas, G. A. (Intern), Kleani, K. (Ekstern), Mijatovic, N. (Intern), Sweeney, C. W. (Ekstern), Jensen, B. B. (Ekstern), Holbøll, J. (Intern)
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Scopus rating (2014): SJR 1.272 SNIP 3.75 CiteScore 3.42
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Scopus rating (2013): SJR 1.275 SNIP 2.464 CiteScore 2.75
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Scopus rating (2012): SJR 1.126 SNIP 2.39 CiteScore 2.36
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
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ISI indexed (2011): ISI indexed yes
Developing a framework to transfer knowledge from operations into engineering design projects: understanding the knowledge management challenge

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Organisations: Department of Management Engineering, Engineering Systems, Copenhagen Center for Health Technology
Authors: Souza da Conceição, C. (Intern), Jensen, A. R. V. (Intern), Broberg, O. (Intern)
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Developing a Support Tool for Global Product Development Decisions
This paper investigates how global product development decisions are made through a multiple-case study in three Danish engineering. The paper identifies which information and methods are applied for making decisions and how decision-making can be supported based on previous experience. The paper presents results from 51 decisions made in the three companies, and based on the results of the studies a framework for a decision-support tool is outlined and
discussed. The paper rounds off with an identification of future research opportunities in the area of global product development and decision-making.

Development and implementation strategy for the of product configuration systems in engineer-to-order companies

This paper will address how to develop a strategy when developing and implementing product configuration systems (PCSs) in engineer-to-order (ETO) companies. PCSs are often gradually implemented especially where there are complex products and processes in order to break down the overall project and reduce risk. This highlights the importance of having an overall strategy to guide the long-term development and implementation of PCSs. In this paper, guideline for making the strategy are provided and supplemented with examples based on a case study. The guideline includes the main objectives for the development and implementation process, PCSs to be used to support the sales and/or the engineering processes, more uniform IT support for making product configurations, combining output from different PCSs and finally integrations that includes both internal and external IT systems. Based on this an overview of how PCSs can support the overall configuration process can be generated.

Development of a Simplified Process Integration Methodology for application in Medium–Size Industries

Achieving significant energy savings is fundamental for reaching the ambitious EU 20-20-20 environmental targets. Several methodologies based on the Pinch concept have proved to be highly effective for identifying and assessing energy savings possibilities in the industrial sector. However, saving opportunities may be missed in the case of medium-size industries. Applying these methods may indeed be costly and time consuming, as it can require large engineering
efforts, e.g., for data acquisition. This paper presents a methodology based on process integration techniques, termed "Specific Savings Potential method" (SSP), to depict and promote energy savings in intermediate-size industries for plant retrofit. It builds on the idea that only few of the process streams in a factory should be considered for efficiency measures implementation with regards to economic and operational aspects. Three screening tools are introduced. They are used to reduce the problem size before applying the traditional design procedure. They are based on engineering experience and simple mathematical criteria, including both thermodynamic and economic considerations. Moreover, possibility of using less accurate data or estimates is discussed, since data acquisition is a severely time-consuming task in retrofit projects. This novel methodology is applied to a Danish dairy factory: the results and the method itself are compared with conventional pinch analysis. The findings show that the SSP method is a tool able to simplify and shorten the conventional pinch technique, while depicting the most promising savings opportunities: in the case study a reduction in energy use of 24% is achieved when only considering 24 process streams out of 62. In this sense, it has the potential of promoting the application of PI tools in the industry, especially in medium-size industries where budgets for external consultants are generally low.

General information
State: Published
Organisations: Department of Management Engineering, Department of Mechanical Engineering, Thermal Energy
Authors: Bergamini, R. (Intern), Nguyen, T. (Intern), Bühler, F. (Intern), Elmegaard, B. (Intern), Elmegaard, B. (Intern)
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Process Integration, Retrofit, Dairy industry, Simplification, Time consumption, Data accuracy
Electronic versions:
Bergamini_et_al_.pdf. Embargo ended: 19/06/2016
Source: PublicationPreSubmission
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Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

Differences and similarities of energy innovation systems – comparison of five technology areas in Denmark
This paper presents a study of the energy innovation systems concerning five technology areas in Denmark: biomass energy, wind power, solar cells, fuel cells & hydrogen and energy efficiency technology. The study shows that the characteristics of the innovation systems differ significantly between the areas amongst other things concerning actor landscapes, market formations, and patterns of learning and interaction. This is despite the common context of Danish society and Danish energy systems, policy and institutions. An increase in maturity has appeared in some of the areas over the latest decades. Along with the increase in maturity, a number of new challenges have appeared. Despite internationalization and open economies, the national, domestic level is of significant importance. The paper contributes to current research discussions on the context relations of technological innovation systems, including the significance of the international dimension and the relationships to the established energy sector and incumbents.

General information
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Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Borup, M. (Intern)
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Differences_and_similarities.pdf
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Different Pathways for Achieving Cleaner Urban Areas: A Roadmap towards the White Paper Goal for Urban Transport

The 2011 White Paper on Transport of the European Commission spells out a series of targets for 2030 and 2050. One of the 10 targets is explicitly related to urban transport and stipulates: "Halve the use of 'conventionally fuelled' cars in urban transport by 2030; phase them out in cities by 2050. Achieve essentially CO2-free city logistics in major urban centres by 2030." With this paper we present and discuss a roadmap that deals with the question who needs to do what by when in order to reach the White Paper goal for urban transport. The "stakeholder-driven" roadmap was developed in the FP7 project TRANSFORuM. The paper will present the key findings and the suggested action steps identified in the roadmap. The paper will also exemplify three possible urban transformation pathways towards the urban target. This approach emerged from stakeholder consultations which highlighted the need to take into account the widely differing conditions among European cities.

General information
State: Published
Organisations: Department of Transport, Transport policy and behaviour, Karlsruhe Institute of Technology KIT, University of Oxford, Rupprecht Consult - Forschung & Beratung GmbH
Authors: Schippl, J. (Ekstern), Gudmundsson, H. (Intern), Sørensen, C. H. (Intern), Anderton, K. (Ekstern), Brand, R. (Ekstern), Leiren, M. (Ekstern), Reichenbach, M. (Ekstern)
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Urban Transport, Roadmap, White Paper Target, Transformation Pathways, Stakeholders
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Distraktion er fortsat en risikofaktor

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern), Haustein, S. (Intern)
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Main Research Area: Technical/natural sciences

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BFI (2013): BFI-level 1
Distraktion er stadig en markant risikofaktor i trafikken
På foranledning af Rådet for Sikker Trafik har Transport DTU set på den nyeste forskningslitteratur vedrørende distraktion og bilkørsel. I det følgende præsenteres udvalgte resultater.

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Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern)
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Distraktion og bilkørsel

**General information**
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Organisations: Department of Management Engineering, Technology and Innovation Management, Transport DTU
Authors: Møller, M. (Intern)
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District heating as a source of flexibility in the Nordic electricity market
The present share of variable renewable energy (VRE) generation such as wind power and solar photo voltaic is relative high in many of the Nordic countries. E.g. wind power generated 42% of the annual electricity consumption in Denmark in 2015. The share of VRE is expected to increase in the years to come in order to reach the ambitious renewable energy deployment targets in the Nordic and Baltic countries. Transformation to an energy system increasingly based on VRE will escalate the requirement for flexible operation of the entire energy system, including improved integration among energy sectors. District heating (DH) is an important sector in the Nordic energy system and has a large potential for increased flexible operation in relation to the future electricity system. This potential is only partly exploited today. One reason for this is the differences in regulatory framework conditions for DH compared to the electricity market, e.g. different energy taxes, which may hinder the potential benefits from systems integration and lower the realisable potentials.

**General information**
State: Published
Organisations: Department of Management Engineering, Energy Economics and Regulation, NMBU Ecology and Natural Resource Management
District heating as the infrastructure for competition among fuels and technologies

District heating networks offer the possibility of competition between a wide range of fuels for combustion as well as technologies for comfort heat and cooling in buildings. For decades, cogeneration of electricity and heat for industrial processes or district heating has been a key technology for increased energy efficiency. Additional technologies suitable for small-scale networks are heat pumps, solar panels and local biomass in the form of straw or biogas. For large-scale urban networks, incineration of urban waste and geothermal heat are key technologies. With heat storages district heating infrastructure can contribute significantly to balancing the intermittency of wind power.

This paper is an update of the authors' article published in Energy Policy in 2003 focusing on the European directives focusing on competition in the electricity and gas network industries and promotion of renewables and cogeneration but limited support for the development and expansion of the district heating infrastructure. It was partly based on a contribution to the Shared Analysis Project for the European Commission Directorate-General for Energy, concerning the penetration of combined heat and power (CHP), energy saving, and renewables as instruments to meet the targets of the Kyoto Protocol within the liberalised European energy market.

The update will focus on recent research on district heating in North Europe, which covers not only the physical infrastructure, but also the very important immaterial infrastructure, such as the legal and institutional framework. This includes the experience with market places for electricity trade on an hourly basis over the last two decades. Improved modelling tools and modelling experience will add to the development and performance of district heating systems.

Finally, we summarise the tasks for a European policy concerning the future regulation of district heating net-works for CHP, emphasising the need for rules for a fair competition between natural gas and district heating networks and the need for integration between energy systems.
Does habitual behavior affect the choice of alternative fuel vehicles?

Because of the recent improvements in the electrification process of cars, several types of alternative fuel vehicles are appearing in the car market. However, these new engine technologies are not easily penetrating the market around the world and the conventional ones are still the leaders. A vast literature has explored the reasons for such low market penetration, due mainly to car's features. Using a hybrid choice model approach, in this research we study if, and to which extent, habitual car use influences individual propensity to buy a specific type of engine technology. We found significant latent habitual effect on choices of type of car engine. This effect is important only for some of the car alternatives considered in the study. In particular, habitual car users prefer to buy a new car with liquefied petroleum gas and compressed natural gas types of engine technology instead of a conventional one. The importance of taking into account this latent construct is demonstrated also with the results of the simulated elasticity measures. In fact, the exclusion of latent habitual effect significantly underestimates the elasticity of diesel and hybrid cars and overestimates the elasticity of liquefied petroleum gas car.
Do rich households live farther away from their workplaces?
One of the classic predictions of urban economic theory is that high-income and low-income households choose different residential locations and therefore, conditional on workplace location, have different commuting patterns. The effect of household income on commuting distance may be positive, because of an increased demand for housing as house prices are lower further from workplace locations, or negative, because of an increase in the value of travel time. In addition, the sign of this effect may depend on the location of residential amenities relative to workplaces. Empirical tests of this effect are not standard, due to reverse causation and lack of good control variables. To address reverse causation, this effect is derived using changes in household income and distance through residential moves keeping workplace location constant. Our results contradict previous results in the literature. We show that for Denmark, conditional on the workplace location, the income elasticity of distance is negative and in the order of 0.18. This elasticity is larger for single-earner than for dual-earner households. Conditional on that the household moves residence between municipalities, the elasticity is suggested to be around 0.60.

General information
State: Published
Organisations: Department of Transport, Transport policy and behaviour, Department of Management Engineering, Vrije Universiteit Amsterdam, University of Amsterdam
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Pages: 177–201
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.67 SJR 3.473 SNIP 2.318
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.855 SNIP 2.351 CiteScore 4.17
BFI (2014): BFI-level 2
Drivers of cycling mode-share: analysis of Danes travel behavior 1996-2013

Denmark, as Europe's second cycling nation after the Netherlands, has a cycling mode share of around 15% of all trips. Cycling was decreasing slowly through the 1990s into the 2000s, which inspired substantial investments and promotional efforts to reverse the trend. This paper uses Danish micro-level travel survey data series from 1996 through 2013 to analyze the trend in cycling as main or access mode, as well as the significance of background variables representing key spatial and societal trends. The analysis confirms that the general trend in cycling from 1996 to 2013 was negative irrespective of statistical control for socio-economics, ageing, location, urban density, and weather. Results points to an increasing significance of population density over time as well as changes to the effect of location vis-a-vis the largest urban centers. The difference in cycling between central areas and more peripheral areas is growing. Other changes include a decreasing 'income divide' in cycling as well as a decreasing retirement effect. Results are presented and discussed. (C) 2016 Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license.
Driving Cessation Anno 2010 Which Older Drivers Give Up Their License and Why? Evidence From Denmark
This study focuses on the decision to either stop or continue driving among a cohort of Danish seniors whose driving licenses expire, for the first time, at the age of 70. Based on 1,537 standardized telephone interviews with licensed drivers, we compared persons who intended to renew or not to renew their licenses. The results partly recapture the findings of earlier studies. However, in contrast to former cohorts, a much higher percentage of older drivers intended to keep their licenses. The strongest factors predicting the intention to renew were active car use, feeling safe as a driver, and not having illnesses that impaired driving ability. Three of these factors were strongly correlated with gender, indicating that efforts to prevent premature driving cessation should especially focus on increasing women's confidence and experience in driving.

General information
State: Published
Organisations: Department of Transport, Transport policy and behaviour, The Danish National Centre for Social Research
Authors: Siren, A. K. (Ekstern), Haustein, S. (Intern)
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Scopus rating (2016): SJR 0.572 SNIP 0.766 CiteScore 1.1
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.506 SNIP 0.672 CiteScore 0.88
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.579 SNIP 0.94 CiteScore 1.1
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.665 SNIP 0.952 CiteScore 1.08
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.655 SNIP 1.138 CiteScore 1.16
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.688 SNIP 0.956 CiteScore 1.14
Drying of a tape-cast layer: Numerical modelling of the evaporation process in a graded/layered material

Evaporation of water from a ceramic layer is a key phenomenon in the drying process for the manufacturing of water-based tape cast ceramics. In this paper we present a coupled free-flow-porous-media model on the Representative Elementary Volume (REV) scale for coupling non-isothermal multi-phase compositional porous-media flow — for the ceramic layer — and single-phase compositional laminar free flow — for the air above it. The preliminary results show the typical expected evaporation behaviour from a porous medium initially saturated with water, and water–vapour transport to the free-flow region in accordance with the available results from the literature. We elaborate on and discuss the characteristic drying-rate curve for a single layer ceramic, and compare it with that of a graded/layered ceramic. We, moreover, show the influence of the mean diameter of particles of the porous medium (dp) — which directly affects the intrinsic permeability (K) based on the well-known Ergun's equation — of each single ceramic layer on the drying behaviour of a graded/layered ceramic.

General information
State: Published
Organisations: Department of Mechanical Engineering, Manufacturing Engineering, Department of Management Engineering, Universität Stuttgart
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Pages: 1144-1154
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Scopus rating (2016): CiteScore 3.75 SJR 1.623 SNIP 2.005
Dual boundary spanning: Toward a typology of outside-in open innovation in the Canadian context

The extant literature runs short in understanding openness of innovation regarding and the different pathways along which internal and external knowledge resources can be combined. This study proposes a unique typology for outside-in innovations based on two distinct ways of boundary spanning: whether an innovation idea is created internally or externally and whether an innovation process relies on external knowledge resources. This yields four possible types of innovation, which represent the nuanced variation of outside-in innovations. Using historical data from Canada for 1945–1980, this study unveils different implications of these innovation types for different levels of innovation novelty.
Dynamic optimization of building performance: Use of real-time building data for improving facilities management

In this digital age many companies consider data as new oil. It also includes facilities management organizations. Facilities managers in many private and public organizations are interested in data sets on building characteristics, operation and maintenance activities, usage patterns, space management, energy management, asset management etc.

The research focus of this industrial PhD is to study how these different building data sets can be used and combined for improving total value of buildings, with special emphasis on environmental building performance from lifecycle perspective.
The project follows the implementation of Integrated Facilities Management System KMD Atrium in Danish Facilities Management organizations. The focus is on non-residential buildings from user- and facilities manager perspective. By studying the implementation effects of KMD Atrium, this industrial PhD develops a methodological basis and purpose-based software for simultaneous calculation of total value and environmental performance of non-residential buildings.

So far, a literature study has identified 8 indicator categories that should be considered when addressing environmental performance of building: Energy, GHG emissions, Water, Waste management, Land use, Building materials, Reuse/recycling potential and Indoor Environmental Quality. The study indicates that research is mainly focusing on energy and GHG emission related topics, while other environmental categories are not investigated sufficiently.

The next step of the project combines research and practice through various case studies in which environmental building performance of non-residential buildings will be studied. Case studies will investigate which environmental indicators are used in practice and why, and disclose how building data related to these indicators is collected, used and combined.

**General information**

State: Published
Organisations: Department of Management Engineering, Systems Analysis, Quantitative Sustainability Assessment, KMD
Authors: Maslesa, E. (Intern), Nielsen, S. B. (Intern), Birkved, M. (Intern), Hultén, J. (Ekstern)
Number of pages: 1
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Main Research Area: Technical/natural sciences
Links:
http://www.sustain.dtu.dk/

**Bibliographical note**

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**Dynamic vehicle routing problems: Three decades and counting**

Since the late 70s, much research activity has taken place on the class of dynamic vehicle routing problems (DVRP), with the time period after year 2000 witnessing an areal explosion in related papers. Our paper sheds more light into work in this area over more than 3 decades by developing a taxonomy of DVRP papers according to 11 criteria. These are (1) type of problem, (2) logistical context, (3) transportation mode, (4) objective function, (5) fleet size, (6) time constraints, (7) vehicle capacity constraints, (8) the ability to reject customers, (9) the nature of the dynamic element, (10) the nature of the stochasticity (if any), and (11) the solution method. We comment on technological vis-à-vis methodological advances for this class of problems and suggest directions for further research. The latter include alternative objective functions, vehicle speed as decision variable, more explicit linkages of methodology to technological advances and analysis of worst case or average case performance of heuristics.

**General information**

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Organisations: Department of Management Engineering
Authors: Psaraftis, H. N. (Intern), Wen, M. (Intern), Kontovas, C. A. (Intern)
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BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.927 SNIP 1.033 CiteScore 1.21
Eating to save wild-life: is a truly conservation-minded zoo/aquarium a vegan zoo/aquarium?

According to the European Association of Zoos and Aquaria their mission is ‘to facilitate cooperation … towards the goals of education, research and conservation’. Livestock production is one of the leading causes of often irreversable land use changes, greenhouse gas emissions, loss of biodiversity and different types of environmental degradation – all affecting wildlife negatively, and hence undermining conservation policies that aim to protect individuals, populations and species. But what is the link between livestock production and zoos and aquariums? One link, putting it a bit boldly, could be: Does it make sense to work for conservation by preserving animal species in captivity while selling food to visitors that may be undermining this effort? Complicating the issue is that zoos and aquariums are dependent on generating a profit from ‘non-core’ services such as cafeterias and the like to generate funds for running the zoo, and conceivably, in turn for conservation purposes – funds that might diminish if zoos and aquariums do not sell a variety of food products, including animal-based ones to their visitors. The main question addressed by this paper is: If zoos and aquariums are to work for sustainability and species conservation – should food served in zoos be part of considerations – and to what extent? To answer this question the paper presents the goals of EAZA along with environmental impact profiles, relying on previously published life cycle assessments of the entirety (i.e. from cradle to gate) and across a multitude of impact categories (i.e. including and beyond climate change), of typical food items sold in zoos and aquariums. It describes the impacts on wildlife and nature that these products may have. Further we link this analysis to different ideas of sustainability, addressing the issue of how to balance positive and negative impacts of zoos and aquariums. Finally we discuss the educational opportunities that arise if food served in zoos and aquariums is seen as part of a conservation strategy – and the possible challenges such an approach faces.
Eating to save wild-life: is a truly conservation-minded zoo/aquarium a vegan zoo/aquarium?
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one safety critical incident that they believed would not have happened on a conventional bike. The most frequent explanation offered for these situations was that other road users had underestimated the speed of the e-bike, followed by rider problems regulating e-bike speed. Older cyclists were more likely to report problems maintaining balance due to the weight of the e-bike. Preventive measures discussed include awareness campaigns and making it easier to distinguish e-bikes from conventional bicycles to address the problem of underestimation of speed. We also identified a need to familiarise with the e-bike before using it in demanding traffic situations.

**General information**

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Organisations: Transport policy and behaviour, Department of Management Engineering, Technology and Innovation Management
Authors: Haustein, S. (Intern), Møller, M. (Intern)
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**Ecodesign framework for developing wind turbines**

Despite a wind turbines perceived environmental benefits, there are still many improvements that can be made in the product development process to improve its environmental performance across life cycles. This is especially important as the wind power industry continues to grow, both in volume and size, in response to increasing global market demands. Planning, implementing, monitoring, documenting and communicating product related environmental activities of wind turbines in a life cycle management context is the focal point of this article. The development and application of an ecodesign framework specific to the organizational context of Siemens Wind Power is described. The framework was developed using an iterative, action research design approach which relied on the participation of cross-functional employees. Five iterations occurred over a four year time frame and methods such as workshops, pilots, interviews and life cycle assessment were applied. The ecodesign framework was aligned with the company's formal product lifecycle management process. When combined with life cycle assessment, the framework can identify potential environmental improvements and contribute to coherent and transparent environmental target setting. Examples of this are demonstrated at the technological, organizational and societal levels of the company. Lessons learned obtained during the design iterations call for assigned responsibility through key performance indicators at project and functional levels; adaptive learning approaches to ecodesign based on continuous improvements; and additional capacity building amongst employees in life cycle thinking. The article proposes that a life cycle based ecodesign framework can be a driver for sustainable innovations in components, product systems, technologies and business models.

**General information**

State: Published
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Number of pages: 11
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Publication date: 2016
Main Research Area: Technical/natural sciences

**Publication information**
Ecodesign perspectives of thin-film photovoltaic technologies: A review of life cycle assessment studies

Here, we review 33 life cycle assessment (LCA) studies of thin-film photovoltaic (PV) technologies that have had a holistic coverage in their assessments and/or have included ecodesign aspects. Only five of them were found to have a comprehensive life cycle and impact coverage, and their analyses highlighted the importance of (i) including the entire life cycle of the PV system, in particular the often-omitted disposal stage, and (ii) assessing all relevant impact categories and not just climate change or energy requirements to minimise the risk of burden-shifting. Out of the 28 studies embracing ecodesign considerations in parts of the PV life cycle, the analysis of the eleven of them addressing primary energy demand during module production suggests that electricity consumption during the metal deposition processes is a top contributor and should be prioritised by PV technology developers. A similar analysis of the ten studies having included the balance of system components (BOS) in the assessments showed that these contribute significantly to most environmental impact categories. Beyond recommending that stakeholders in the PV field rely on LCA to support decision-making and to guide scientific research and technological development, we strongly advocate LCA practitioners to include the entire PV system, including the BOS, to identify ecodesign opportunities without risking potential burden-shifting across the different parts of the system and across impact categories.

General information
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Organisations: Department of Energy Conversion and Storage, Functional organic materials, Quantitative Sustainability Assessment, Department of Management Engineering
Authors: Chatzisideris, M. D. (Intern), Espinosa Martinez, N. (Intern), Laurent, A. (Intern), Krebs, F. C. (Intern)
Number of pages: 9
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BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.97 SJR 1.587 SNIP 1.71
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.869 SNIP 1.896 CiteScore 5.16
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.204 SNIP 2.396 CiteScore 5.87
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.174 SNIP 2.582 CiteScore 5.58
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.435 SNIP 2.707 CiteScore 5.25
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.175 SNIP 2.638 CiteScore 5.16
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.524 SNIP 2.121
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.991 SNIP 1.977
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.654 SNIP 1.458
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.359 SNIP 1.488
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.447 SNIP 1.799
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.141 SNIP 1.619
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.932 SNIP 1.178
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.992 SNIP 1.34
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.042 SNIP 1.114
Scopus rating (2001): SJR 0.896 SNIP 1.235
Scopus rating (2000): SJR 0.828 SNIP 0.986
Scopus rating (1999): SJR 0.701 SNIP 0.75
Original language: English
Eco-design, Life cycle assessment, Photovoltaics, Thin film
DOIs: 10.1016/j.solmat.2016.05.048
Source: FindIt
Source-ID: 2305405558
Publication: Research - peer-review › Review – Annual report year: 2016

Economic and social aspects of wind integration

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Energy Systems Analysis
Authors: Skytte, K. (Intern)
Number of pages: 6
Publication date: 2016

Publication information
Media of output: PowerPoint
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: SP_intro_190916_klaus.pdf
Publication: Research › Sound/Visual production (digital) – Annual report year: 2016

Economics of building and operating offshore wind farms

General information
State: Published
Organisations: Department of Management Engineering, Energy Economics and Regulation
Authors: Morthorst, P. E. (Intern), Kitzing, L. (Intern)
Pages: 9-28
Publication date: 2016
Effect factors for marine eutrophication in LCIA based on species sensitivity to hypoxia

Hypoxia is an important environmental stressor to marine species, especially in benthic coastal waters. Increasing anthropogenic emissions of nutrients and organic matter contribute to the depletion of dissolved oxygen (DO). Biotic sensitivity to low levels of DO is determined by the organisms' ability to use DO as a respiratory gas, a process depending on oxygen partial pressure. A method is proposed to estimate an indicator of the intensity of the effects caused by hypoxia on exposed marine species. Sensitivity thresholds to hypoxia of an exposed ecological community, modelled as lowest-observed-effect-concentrations (LOEC), were compiled from literature for 91 demersal species of fish, crustaceans, molluscs, echinoderms, annelids, and cnidarians, and converted to temperature-specific benthic (100 m depth) LOEC values. Species distribution and LOEC values were combined using a species sensitivity distribution (SSD) methodology to estimate the DO concentration at which the potentially affected fraction (PAF) of the community's species having their LOEC exceeded is 50% (HC50LOEC). For the purpose of effect modelling in Life Cycle Impact Assessment (LCIA), effect factors (EF, [(PAF) m3 kgO2 -1]) were derived for five climate zones (CZ) to represent the change in effect due to a variation of the stressor intensity, or EF = ΔPAF/ΔDO = 0.5/HC50LOEC. Results range from 218 (PAF) m3 kgO2 -1 (polar CZ) to 306 (PAF) m3 kgO2 -1 (tropical CZ). Variation between CZs was modest so a site-generic global EF of 264 (PAF) m3 kgO2 -1 was also estimated and may be used to represent the average impact on a global ecological community of marine species exposed to hypoxia. The EF indicator is not significantly affected by the major sources of uncertainty in the underlying data suggesting valid applicability in characterisation modelling of marine eutrophication in LCIA.
Effect factors for terrestrial acidification in Brazil

To support the increased use of existing Life Cycle Impact Assessment (LCIA) methodologies across the world, new methodological elements have been developed towards spatially resolved impact assessment. Spatially resolved methods could better capture the differences of regional environmental conditions, which is an essential approach considering countries like Brazil, with high biodiversity. Previous studies have assessed the impacts of terrestrial acidification from the estimations of the potential losses of vascular plants species richness as a result of exposure to acidifying substances for 13 biomes, with 2409 species addressed for whole world. In this context this work aims to provide spatially-differentiated effect factors (EF) for terrestrial acidification in Brazil and support the development of spatially-differentiated characterization factors for Brazil. In order to maintain compatibility with existing LCIA methods the effect factors were developed using the framework adopted by LC-Impact and Impact World+ methods. Soil pH was used as an indicator of soil acidity to predict plant occurrences. From the number of plant species occurring at each 0.1 pH unit response relationships of species richness and soil pH were developed. The species richness in each ecoregion were transformed into an empirical potentially not occurring fraction, which is a zero-to-one measure used to represent the presence or
absence of species. The set of data consists of 976345 records of plants occurrences in Brazil, represented by 33167 species, indicating that this is a comprehensive study. Maps of soil pH in Brazil were extracted at 1-km resolution and pH values were extracted for the depth range of 0-30 cm. For each ecoregion, species richness was plotted against soil pH and the exposure-response curves for acidification described the behavior of plant species in a certain region when it is exposed to acidic conditions. From these curves it was possible to derive the effect factors for terrestrial acidification. The results of this work show that spatial differentiation is meaningful when it is possible to combine fine spatial resolutions and highly representative data and this approach can be applied for other impact categories and regions, and contribute to the development of spatial differentiated LCIA methodologies.

**General information**

State: Published

Organisations: Department of Management Engineering, Quantitative Sustainability Assessment

Authors: Crespo Mendes, N. (Intern), Laurent, A. (Intern), Hauschild, M. Z. (Intern)

Publication date: 2016

Event: Abstract from SETAC Europe 26th Annual Meeting, Nantes, France.

Main Research Area: Technical/natural sciences

Electronic versions:

SETAC2016_short_ncme.pdf

Source: PublicationPreSubmission

Source-ID: 127049440

Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2016

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**Effect modifiers in intervention research at hospitals in three Nordic countries**

**Introduction:**

The impact of ergonomic interventions may be offset by other changes at the work place, primarily rationalizations. These have previously been shown to imply a dominant negative effect on health and risk factors, thus causing effect modification (Westgaard & Winkel 2011). The present paper aims to present assessment of potential effect modifiers in intervention studies at hospital wards in Denmark, Iceland and Sweden.

**Material and methods:**

The effect modifiers were assessed by a newly developed method (the EMA method; Edwards & Winkel 2016). It is a type of group interview including 3-6 participants representing all occupational groups in the investigated organization. The group is asked to write down significant changes at the workplace during the investigated period. The method also includes a semi-qualitative assessment of the potential Work Environment (WE) impact of each modifier. It aims to capture both the individual and collective account of all significant events that may have caused a significant impact in relation to the specific aim of the investigated intervention. Thirteen hospital wards went through interventions based on either the lean tool VSM (Value Stream Mapping) (6 wards) or the ErgoVSM method (Jarebrant et al, 2010) where additional focus is on ergonomic issues (7 wards).

**Results:**

In total 120 interventions were implemented. However, 322 significant modifiers were assessed to have occurred during the intervention period. Of these, 120 were assessed to imply impaired WE, 166 a positive impact, 33 no impact and 3 were not assessable. The number of significant modifier events varied between wards from 8-48, while the number of implemented interventions varied from 0-28. The semi-qualitative assessments suggested a major impact on WE due to modifiers. At seven wards the dominating impact of the modifiers was estimated to improve WE; at two wards the modifiers were estimated mainly to impair WE while four wards showed a mixture of modifiers, some estimated to improve and other to impair WE.

**Conclusion:**

Numerous effect modifiers occurred parallel to the investigated interventions. This jeopardizes any inference regarding impact of the investigated interventions on WE. The study thereby highlights the significance of considering effect modifiers in ergonomic intervention research.

**General information**

State: Published

Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Swerea AB, Reykjavik University, Nordic School of Public Health NHV, University of Iceland, Sahlgrenska University Hospital


Publication date: 2016

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**Host publication information**

Title of host publication: Sustainable healthcare through professional collaboration across boundaries.

Main Research Area: Technical/natural sciences


Electronic versions:
Effekt af cykeltræningskursus for forældre

I Østrig har man udviklet et kursus, der har det formål at hjælpe forældrene til bedre at kunne træne og vejlede deres børn til at blive sikre cyklister. Kurset er blevet evalueret, og evalueringen tyder på, at kurset både bidrager til at øge forældrenes kompetencer og engagement i deres børns cykeltræning samtidig med at børnenes faktiske cykelfærdigheder forbedres. Det anbefales dog at foretage yderligere undersøgelser for at nuancere og cementere de positive resultater.

Effekten af distraktion ved manuel overtagelse af bilkørsel

En ny undersøgelse tyder på, at reaktionstid ikke er et godt mål for, i hvor høj grad bilisters kørsel bliver påvirket af distraherende aktiviteter i situationer, hvor bilisten skal overtage kørslen manuelt efter at have kørt i delvist automatiseret tilstand. Forklaringen kan være, at det at gribe efter et rat er en refleksagtig respons, der trækker på andre ressourcer end de kognitive og visuelle ressourcer, der er centrale for at køre sikkert.

Efficiency and Robustness in Railway Operations

Passenger railway transport is an effective means of providing high capacity transport that is energy efficient and has low emissions. As the population of Denmark grows and there is an increased request for mobility, there is a need for railway services offering greater capacity and more reliability. Offering these services presents a challenging sequence of planning problems for operators. These range from problems considered on a daily basis to planning for years in the future, with different problems interacting and influencing each other.

Operations research methods can be used to effectively model, investigate, and solve railway planning problems. Despite advances in computational power these large problems are still challenging to solve, especially as more modelling detail is sought. Within a Danish context this thesis seeks to apply operations research methods to different planning problems beyond past approaches, and where applicable, investigate solution methods that place more focus on the passenger and passenger experience. To cater to the growing demand for rail transport, and compete with different modes of transport, Danish railway operators must offer a consistent, reliable service, that is well
planned from both a passenger and operator perspective. This thesis therefore considers different planning problems within passenger railway considering robustness of the system, and efficiency and optimality from the point of view of the passenger or operator.

The contributions of the thesis are in the investigation of robustness in railway, the application of optimization to a number of railway planning problems, and a detailed consideration of the specific concerns of Danish railway services. These contributions are summarised in the introductory chapter, and in the latter part of the thesis are given in each chapter.

**General information**
State: Published
Organisations: Department of Management Engineering, Management Science
Authors: Bull, S. H. (Intern), Larsen, J. (Intern), Pisinger, D. (Intern)
Number of pages: 250
Publication date: 2016

**Publication information**
Publisher: DTU Management Engineering
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: SBull_Thesis_2016.pdf

**Relations**
Projects:

**Elective course student sectioning at Danish high schools**
The Elective Course Student Sectioning (ECSS) problem is a yearly recurrent planning problem at the Danish high schools. The problem is of assigning students to elective classes given their requests such that as many requests are fulfilled and the violations of the soft constraints are minimized. This paper presents an Adaptive Large Neighborhood Search heuristic for the ECSS. The algorithm is applied to 80 real-life instances from Danish high schools and compared with solutions found by using the state-of-the-art MIP solver Gurobi. The algorithm has been implemented in the commercial product Lectio, and is thereby available for approximately 200 high schools in Denmark.

**General information**
State: Published
Organisations: Department of Management Engineering, Management Science
Authors: Kristiansen, S. (Intern), Stidsen, T. R. (Intern)
Number of pages: 19
Pages: 99-117
Publication date: 2016
Main Research Area: Technical/natural sciences

**Publication information**
Volume: 239
Issue number: 1
ISSN (Print): 0254-5330
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.44 SJR 1.009 SNIP 1.211
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.037 SNIP 1.108 CiteScore 1.29
Electric Boilers in District Heating Systems: A Comparative Study of the Scandinavian market conditions

**General information**

**State:** Published  
**Organisations:** Department of Management Engineering, Energy Economics and Regulation, NMBU Ecology and Natural Resource Management  
**Authors:** Soysal, E. R. (Intern), Sneum, D. M. (Intern), Skytte, K. (Intern), Olsen, O. J. (Intern), Sandberg, E. (Ekstern)  
**Number of pages:** 13  
**Publication date:** 2016

**Host publication information**

**Title of host publication:** Swedish Association for Energy Economics Conference 2016  
**Main Research Area:** Technical/natural sciences  
**Conference:** Swedish Association for Energy Economics Conference 2016, Luleå, Sweden, 23/08/2015 - 23/08/2015  
**Electronic versions:**

**DOI:** 10.1007/s10479-014-1593-7  
**Publication:** Research - peer-review › Journal article – Annual report year: 2014
Emergence of an urban traffic macroscopic fundamental diagram
This paper examines mild conditions under which a macroscopic fundamental diagram (MFD) emerges, relating space-averaged speed to occupancy in some area. These conditions are validated against empirical data. We allow local speed-occupancy relationships and, in particular, require no equilibrating process to be in operation. This means that merely observing the stable relationship between the space-averages of speed, flow and occupancy are not sufficient to infer a robust relationship and the emerging MFD cannot be guaranteed to be stable if traffic interventions are implemented.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Transport DTU, KTH - Royal Institute of Technology
Authors: Ranjan, A. (Intern), Fosgerau, M. (Intern), Jenelius, E. (Ekstern)
Number of pages: 23
Publication date: 2016

Publication information
Electronic versions:
MPRA_paper_74350.pdf
Main Research Area: Technical/natural sciences
Source: PublicationPreSubmission
Source-ID: 130448937

Emergency Management involving Critical Infrastructure Disruptions: operationalizing the deployment of resilience capabilities
Recent developments nurturing the importance of Emergency Management (EM) of Critical Infrastructure (CI) brought a shift of emphasis from protecting the systems to building resilience. Resilience approach is required to cope with inevitable events, ensuring ability to anticipate, absorb, adapt to, and/or rapidly recover from a potentially disruptive event. The study proposes a novel approach to integrating the resilience capacities of CI into the EM cycle, which facilitates emergency services and CI operators to collaborate in addressing resilience improvement measures, while planning to cope with CI disruptions. It grounds on a previously published comprehensive framework which reflects the main characteristics of such emergencies (e.g. interdependent, multi-sectoral, multi-stakeholder) and supports the identification, assessment and development of specific technical and organizational capabilities. A pilot application is provided on a real case involving the public and private actors engaged in the Regional Programme on Critical Infrastructure Protection and Resilience (CIP-R) in Lombardy (Italy).

General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Transport DTU, Copenhagen Center for Health Technology, Technology and Innovation Management, Fondazione Politecnico di Milano
Authors: Trucco, P. (Ekstern), Petrenj, B. (Ekstern), Kozin, I. (Intern), Andersen, H. B. (Intern)
Pages: 548-555
Publication date: 2016

Host publication information
Title of host publication: Risk, Reliability and Safety: Innovating Theory and Practice: Proceedings of ESREL 2016
Main Research Area: Technical/natural sciences
Electronic versions:
ESREL2016_READ_full_txt_final_submission.pdf
Source: PublicationPreSubmission
Source-ID: 128651874
Publication: Research › Article in proceedings – Annual report year: 2017

Employee motivation in Product-Service-System providers
This research investigates how intrinsic and extrinsic motivation factors contribute to employee motivation in providers of Product-Service Systems (PSS). Employee motivation determines the quality of the delivered service and is thus an area of great importance for PSS providers. We present rich case-based data collected through semi-structured interviews, a survey and secondary sources. The analysis showed the particularly high importance of intrinsic and individual motivation factors such as the fulfilling nature of the work and skill development showing the ownership and pride service employees took in their work. Further, the organisation needs to set the context of high employee motivation by enabling flexibility and
performance feedback. Our research contributes to the literature by providing a first empirical study of employee motivation in PSS providers and thus providing important insights on the implementation of a servitisation strategy.

**General information**

State: Published
Organisations: Department of Management Engineering, Engineering Systems
Authors: Kreye, M. (Intern)
Pages: 1249-1259
Publication date: 2016
Main Research Area: Technical/natural sciences

**Publication information**

Journal: Production Planning & Control
Volume: 27
Issue number: 15
ISSN (Print): 0953-7287
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.45 SJR 1.073 SNIP 1.226
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.127 SNIP 1.252 CiteScore 2.23
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.009 SNIP 1.349 CiteScore 1.95
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.658 SNIP 1.122 CiteScore 1.29
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.669 SNIP 0.89 CiteScore 1.21
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.543 SNIP 0.67 CiteScore 0.87
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.509 SNIP 0.685
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.546 SNIP 0.743
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.633 SNIP 0.868
Scopus rating (2007): SJR 0.701 SNIP 0.885
Scopus rating (2006): SJR 0.542 SNIP 0.836
Scopus rating (2005): SJR 0.579 SNIP 0.936
Scopus rating (2004): SJR 0.631 SNIP 1.085
Scopus rating (2003): SJR 0.647 SNIP 1.022
Scopus rating (2002): SJR 0.468 SNIP 0.597
Scopus rating (2001): SJR 0.707 SNIP 0.84
Scopus rating (2000): SJR 0.517 SNIP 0.724
Scopus rating (1999): SJR 0.544 SNIP 0.672
Energy and low carbon development efforts in Ghana: institutional arrangements, initiatives, challenges and the way forward

Over the years, Ghana has invested considerable effort and resources together with international partners to develop the energy sector and to mainstream energy low carbon pathways into national development plans. Low carbon development (LCD) provides a good opportunity, of not only building upon earlier energy and climate change local processes and structures but also help to mainstream low carbon agenda in economic activities and national development plans. For this to work however, require efficient institutions and effective institutional arrangements. Based on extensive literature analysis, personal communications and inputs from stakeholders, the paper highlights the key institutional arrangements, their interactions, challenges and proffers recommendations for improvements. To improve energy and low carbon development effort from the perspectives of institutional structures, would require, clearer institutional mandates, continuous improvements in institutional coordination (intra and inter), capacity and skills development, sustained visibility of the essence of energy and LCD at high political levels as well as engagement by civil societies. Equally important are the issues of finance, data availability and quality, monitoring and evaluation.

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership, Environmental Protection Agency
Authors: Tutu Benefoh, D. (Ekstern), Ackom, E. (Intern)
Pages: 481-503
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: AIMS Energy
Volume: 4
Issue number: 3
ISSN (Print): 2333-8326
Ratings:
Web of Science (2018): Indexed yes
Web of Science (2017): Indexed yes
Web of Science (2016): Indexed yes
Original language: English
Electronic versions:
AIMS_Energy_Benefoh_Ackom_2016.pdf
Energy Economics and Policy

General information
State: Published
Organisations: Department of Management Engineering, Energy Economics and Regulation
Authors: Skytte, K. (Intern)
Number of pages: 35
Publication date: 2016

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: ucd_Skytte_190516_c.pdf
Source: PublicationPreSubmission
Source-ID: 127067268
Publication: Research › Sound/Visual production (digital) – Annual report year: 2016

Energy Efficiency
This report was commissioned by REN21 and produced in collaboration with a global network of research partners. Financing was provided by the German Federal Ministry for Economic Cooperation and Development (BMZ), the German Federal Ministry for Economic Affairs and Energy (BMWi), the Government of South Africa, the Inter-American Development Bank (IDB), the United Nations Environment Programme (UNEP) and the World Bank Group. A large share of the research for this report was conducted on a voluntary basis.

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Petrichenko, K. (Intern), Farrell, T. C. (Intern), Thorsch Krader, T. (Intern), Tsakiris, A. (Intern)
Number of pages: 272
Publication date: 2016

Host publication information
Title of host publication: Global Status Report : Renewables 2016
ISBN (Print): 78-3-9818107-0-7
Chapter: 6
Main Research Area: Technical/natural sciences
Source: PublicationPreSubmission
Source-ID: 127081012
Publication: Research › Report chapter – Annual report year: 2016

Energy efficiency and renewable energy modeling with ETSAP TIAM - challenges, opportunities, and solutions
The objectives of the Sustainable Energy for All (SE4ALL), a United Nations (UN) global initiative, are to achieve, by 2030: 1) universal access to modern energy services; 2) a doubling of the global rate of improvement in energy efficiency; and 3) a doubling of the share of renewable energy in the global energy mix (United Nations, 2011; SE4ALL, 2013a). The purpose of this study is to determine to what extent the energy efficiency objective supports the other two objectives, and to what extent the SE4ALL objectives support the climate target of limiting the global mean temperature increase to 2°C over pre-industrial times. To accomplish this, pathways are constructed for each objective, which then form the basis for a scenario analysis using the Energy Technology System Analysis Program TIMES Integrated Assessment Model (ETSAP-TIAM). This presentation focuses on the modeling challenges including updating data, setting constraints, and reporting on output. The presentation also addresses the addition of new model components such as traditional biomass and building energy efficiency.
Energy Efficiency and the 10YFP- Background Paper for the 10YFP Workshop

General information
State: Published
Organisations: Department of Management Engineering, UNEP DTU Partnership
Authors: Painuly, J. P. (Intern), Petrichenko, K. (Intern), Painuly, J. P. (Intern), Zhu, X. (Intern), Lister, M. (Intern), Thorsch
Krader, T. (Intern)
Number of pages: 82
Publication date: 2016
Event: Paper presented at Integrating EE into the 10YFP on Sustainable Consumption and Production Patterns, Copenhagen, Denmark.
Main Research Area: Technical/natural sciences
Electronic versions:
10YFP_EE_paper_Final_19_10_2016.pdf
Source: PublicationPreSubmission
Source-ID: 128588005
Publication: Research › Paper – Annual report year: 2017

This report collates a set of indicators, figures and tables for the energy innovation system in Denmark. Emphasis is on renewable energy and other technologies for moving towards sustainability. The purpose is to provide an overview of indicators available for illuminating dynamics and characteristics of energy innovation systems and to the extent possible offer figures of the developments in the individual indicators.
The report is an update of a report published in 2012. Graphs and numbers are updated with the most recent data available. The text is updated where needed in connection to the individual indicators as well as in the general remarks and conclusions. A limited number of new indicators and measurements are included. In addition, the accounts are in a few cases changed due to changes in data availability or in measurement methods.
The report is produced as part of the activities in “EIS – Strategic research alliance for Energy Innovation Systems and their dynamics – Denmark in global competition”. EIS is funded by the Danish Council for Strategic Research (Innovation Fund Denmark) and by the involved research organisations.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, NIFU Nordic Institute for Studies in Innovation, Research and Education
Authors: Borup, M. (Intern), Klitkou, A. (Ekstern), Iversen, E. (Ekstern)
Number of pages: 57
Publication date: 2016

Publication information
Publisher: DTU Management Engineering and NIFU
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Energy_Innovation_Systems_2016.pdf
Links:
Entrepreneurial Orientation: The Dimensions' Shared Effects on Explaining Firm Performance

We shed new light on the structure of the relationship between entrepreneurial orientation (EO) and firm performance and how this relationship varies across contexts. Using commonality analysis, we decompose the variance in performance—in terms of the effects of innovativeness, proactiveness, and risk taking—into parts that are attributable to unique variations in these dimensions (unique effects) and those attributable to covariation between these dimensions (shared effects). By demonstrating the empirical relevance of unique, bilaterally shared, and commonly shared effects in a heterogeneous sample of low-tech, high-tech, and multi-sector firms, we consolidate existing conceptualizations of EO and propose an extension of the extant theoretical views of the construct.
Environmental Assessment of Integrated Food and Cooking Fuel Production for a Village in Ghana

Small-scale farming in Ghana is typically associated with synthetic fertilizer dependence and soil degradation. The farmers often rely on wood fuel for cooking imported from outside the farmland, a practice that is associated with deforestation. Integration of food and energy production may be a holistic approach to solving these issues. We study four approaches to providing food and fuel for cooking in a small-scale farming community. Present practice (PP) of synthetic fertilizer based food production and provision of wood fuel from outside the farming area is compared to three modeled, integrated technology options: integrated food and household-scale biogas production (HH Biogas), integrated food and village-scale biogas production (Village Biogas), and integrated food and wood fuel production (Agroforestry). Integrated approaches are able to eliminate the import of wood fuel, reduce synthetic fertilizer use by 24%, 35% and 44% and soil loss by 15%, 20% and 87%, respectively, compared to present practice. An Emergy Assessment (EmA) shows that integrated approaches are relevant substitutes to present practice considering biophysical efficiency indicated by Unit Emergy Value (in solar emjoules (sej) per J of output) and dependence on renewable inputs indicated by the Global Renewability Fraction (in %): 2.6–3.0 × 10^5 sej/J and 38%–48% (PP), 2.5–2.8 × 10^5 sej/J and 41%–46% (HH Biogas), 2.4–2.6 × 10^5 sej/J and 45%–47% (Village Biogas), 1.7–2.4 × 10^5 sej/J and 49%–66% (Agroforestry). Systematic recycling and use of local resources may play a pivotal role in reducing the dependence on non-renewable resources in Ghanaian farming, ensuring long-term soil fertility and stemming the current deforestation of wood reserves.

General Information
State: Published
Organisations: Department of Chemical and Biochemical Engineering, Center for BioProcess Engineering, Department of Management Engineering, Systems Analysis, DTU Climate Centre
Authors: Kamp, A. (Intern), Østergård, H. (Intern), Bolwig, S. (Intern)
Number of pages: 16
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: Sustainability
Volume: 8
Issue number: 5
Article number: 404
ISSN (Print): 2071-1050
Ratings:
BFI (2018): BFI-level 1
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BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.96 SJR 0.524 SNIP 0.911
Web of Science (2016): Indexed yes
Scopus rating (2015): SJR 0.473 SNIP 0.926 CiteScore 1.78
Web of Science (2015): Indexed yes
Scopus rating (2014): SJR 0.499 SNIP 1.048 CiteScore 1.52
Web of Science (2014): Indexed yes
Scopus rating (2013): SJR 0.539 SNIP 1.247 CiteScore 1.43
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): SJR 0.486 SNIP 0.809 CiteScore 1.18
ISI indexed (2012): ISI indexed no
Scopus rating (2011): SJR 0.27 SNIP 0.501 CiteScore 0.65
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 0.156 SNIP 0.388
Original language: English
Biogas, Agroforestry, Nutrient recycling, Transition, Sustainable development, Emergy, Ghana, Case study
Electronic versions:
Environmental_Assessment.pdf
Environmental Impact of Long Distance Travel

This paper presents an analysis of the CO$_2$ emission resulting from long distance travel by Danes. The emissions are analysed as the Danes' footprint the whole way from Denmark to the final destination. International travel represents 31% of the Danes' CO$_2$ emission from passenger travel and the climate burden from long overseas distances is especially high even though only few travel overseas. The travel activity is furthermore increasing much more for long distances than for European destinations. Domestic travel activity with overnight stay is nearly stagnating. The study furthermore shows that the Danish development is not especially outstanding compared to other countries.

General information
State: Published
Organisations: Department of Transport
Authors: Christensen, L. (Intern)
Number of pages: 10
Pages: 850-859
Publication date: 2016

Host publication information
Title of host publication: Transportation Research Procedia
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Series: Transportation Research Procedia
ISSN: 2352-1465
Main Research Area: Technical/natural sciences
Conference: 6th Transport Research Arena, Warsaw, Poland, 18/04/2016 - 18/04/2016
Long Distance Travel, Climate Foot Print, Development Long Distance Travel, Air Travel, Europeans' Holiday Activity
Electronic versions:
1_s2.0_S2352146516300333_main.pdf
DOIs:
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Bibliographical note
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Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

Environmental impacts of flood control measures in climate change adaptation strategies

Because of climatic changes, large investments are needed to keep flood risk at an acceptable level in urban areas. Increasing dimensions of underground sewer systems and retention basins are increasingly supplemented with multi-functional approaches, aimed at managing water locally and/or route it on the surface without harming assets. When evaluating different adaptation approaches, a cost assessment is typically carried out, while environmental impacts usually are not considered. To close this gap, a Life Cycle Assessment (LCA) based method is developed, which allows to quantify environmental impacts of different storm water management strategies. It is tested with two different adaptation strategies for the Nørrebro catchment in Copenhagen, Denmark: A Cloudburst Management Plan (CMP), which uses a multi-functional approach and combines green infrastructure with subsurface pipes, and a Subsurface scenario (SSA), which uses only pipes and underground retention basins. To ensure comparability, flood safety levels for different rain events are defined, which have to be met in both scenarios. The environmental impacts are calculated for eight different categories, including climate change, resource depletion, eutrophication and acidification. The case study shows significantly lower impacts for the multi-functional, green infrastructure CMP, compared to the SSA. Among the installations, those measures which are installed to ensure no water on the surface during rain events with a return period of up to 10 years and handling small events with a return period of up to 0.2 years cause by far the largest share of the total environmental impacts in both scenarios (up to 96% for the CMP, and up to 84% for the SSA. In contrast, measures aimed at handling extreme events with a return period of up to 100 years only contribute up to 4% of the environmental impacts for the CMP and less than 1% for the SSA. Our method helps explain how the handling of everyday events and extreme rain events affect the environmental sustainability of climate change adaptation and it enables cities to consider the environmental sustainability of climate change adaptation solutions in the planning process.
Environmental performance of hydrothermal carbonization of four wet biomass waste streams at industry-relevant scales

Hydrothermal carbonization (HTC) of green waste, food waste, organic fraction of municipal solid waste (MSW), and digestate is assessed using life cycle assessment as a potential technology to treat biowaste. Water content of the biowaste and composition of the resulting hydrochar are important parameters influencing environmental performance. Hydrochar produced from green waste performs best and second best in respectively 2 and 10 out of 15 impact categories, including climate change, mainly due to low transportation needs of the biowaste and optimized pumping efficiency for the feedstock. By contrast, hydrochar produced from the organic fraction of MSW performs best in 6 impact categories, but has high potential impacts on human health and ecosystems caused by emissions of toxic elements through ash disposal. The greatest potential for environmental optimization for the HTC technology is in the use of heat and electricity with increasing plant size, but its overall environmental performance is largely influenced in a given geographic location by the incumbent waste management system that it replaces. Impact scores are within the range of existing alternative treatment options, suggesting that despite being relatively immature technology, and depending on the geographic location of the plant, HTC may be an attractive treatment option for biowaste.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Universidad Politecnica de Valencia
Authors: Owsiianik, M. (Intern), Ryberg, M. (Intern), Renz, M. (Ekstern), Hitzl, M. (Ekstern), Hauschild, M. Z. (Intern)
Number of pages: 9
Pages: 6783–6791
Publication date: 2016
Main Research Area: Technical/natural sciences
Publication information
Journal: A C S Sustainable Chemistry & Engineering
Volume: 4
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Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 5.92 SJR 1.523 SNIP 1.408
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.381 SNIP 1.338 CiteScore 5.39
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.195 SNIP 1.207 CiteScore 4.3
Web of Science (2014): Indexed yes
Environmental Sustainability Assessment of Integrated Food and Bioenergy Production with Case Studies from Ghana

The use of agricultural residues for the production of bioenergy offers tantalising prospects of reduced pollution and greater food sovereignty. Integrated food and bioenergy systems seek to optimise the joint production of food and energy. Integrated food and bioenergy systems may be evaluated and compared with other food and energy systems using Environmental Sustainability Assessment (ESA).

This thesis investigates a range of integrated food and residue-based bioenergy production systems and provides methodological developments that are relevant for the assessment of such systems. The methodological developments concern distribution of environmental burden in multifunctional systems; consistent accounting of human labour inputs; and modelling of uncertainty regarding future conditions. Residue-based bioenergy relies on feedstock from production systems that are multifunctional, which means that they provide several outputs. Environmental impact assessment of residue-based bioenergy, therefore, involves the identification of relevant impacts occurring prior to the conversion of residues into bioenergy. Dividing the environmental burden of food production between food and crop residues to maintain a single-product focus is a contentious practice, since no obvious allocation factor is available. In evaluations of bioenergy production systems that are based on residues from food production, it is recommended to expand the assessment’s system perspective to include food production and food outputs. Human labour is an indispensable input in all agricultural and bioenergy production activities evaluated in ESA. Assessment methods, however, differ with respect to accounting for human labour inputs. Emergy Assessment (EmA) routinely includes human labour inputs, but based on a variety of calculation approaches. The collection of methods referred to as LCA (Life Cycle Assessment) methods usually disregard human labour as a relevant input. It is suggested to adhere to a systematic approach to estimating the environmental impact of human labour inputs that is applicable in EmA and other ESAs. I recommend that human labour be accounted in labour time, and that labour’s environmental impact be based on all inputs required for making labour available.

Practices and technologies that are expected to be implemented several decades into the future and that are compared with existing alternatives should not solely be compared using current conditions. The evaluation of these systems must take into consideration that future conditions may be significantly different from current conditions. It is suggested to use explorative scenarios based on narratives of the future to emphasise and be transparent about the uncertainty involved with planning for the medium- to long-term. Modelling parameters may be deduced from such scenarios, making it possible to calculate scenario-dependent results. Applying the methodological developments above, two cases of integrated food and bioenergy production in Ghana are described. Crop residue-based biogas production and nutrient cycling in a remote village was shown to be a viable alternative to wood fuel and synthetic fertiliser use, in spite of increased labour inputs. In future scenarios where materials are scarce and labour plentiful, the investigated biogas-based agroforestry technologies appear relatively more attractive. Fruit and cocoa residue-based biogas production in a fruit processing facility, with return of compost to pineapple farmers also proved to be a viable technology. It is recommended that relevant stakeholders explore the implementation of biogas and nutrient recycling technologies in preparation of reduced access to existing energy and nutrient sources. Primary contributions to the research field are suggested improvements to specific methods of evaluating integrated food and residue-based bioenergy systems. Evaluation of such systems requires an expanded system perspective that encompasses multiple outputs. It requires ways to properly account for labour, since energy and material input reductions, often associated with integration, result in increased labour inputs, as observed in the case studies. Evaluation also requires consideration of scenario uncertainty since implementation takes time and societal conditions may change significantly during the implementation phase. The contribution includes empirical data concerning farming and bioenergy conversion technologies in Ghana and a recommendation to implement biogas and nutrient recycling practices.
Ergonomic Value Stream Mapping (ErgoVSM): Tool and user guide

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Swerea AB, Nordic School of Public Health NHV, Sahlgrenska University Hospital, Reykjavik University, University of Iceland
Authors: Jarebrant, C. (Ekstern), Johansson Hanse, J. (Ekstern), Harlin, U. (Ekstern), Ulin, K. (Ekstern), Winkel, J. (Intern), Edwards, K. (Intern), Birgisdóttir, B. D. (Ekstern), Gunnarsdóttir, S. (Ekstern)
Number of pages: 36
Publication date: 2016

Publication information
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Volume: 731
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Main Research Area: Technical/natural sciences
Electronics versions:
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Bibliographical note
ANP 2016:731
Source: PublicationPreSubmission
Source-ID: 127587812
Publication: Research › Report – Annual report year: 2016

Ergonomisk Værdistrømsanalyse (ErgoVSM) - Værktøj og brugerguide

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, Swerea AB, Nordic School of Public Health NHV, Sahlgrenska University Hospital, Reykjavik University, University of Iceland
Authors: Jarebrant, C. (Ekstern), Johansson Hanse, J. (Ekstern), Harlin, U. (Ekstern), Ulin, K. (Ekstern), Winkel, J. (Intern), Edwards, K. (Intern), Birgisdóttir, B. D. (Ekstern), Gunnarsdóttir, S. (Ekstern)
Publication date: 2016

Publication information
Original language: English
Main Research Area: Technical/natural sciences
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ErgoVSM_DA.pdf
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Publication: Research › Report – Annual report year: 2016

ErgoVSM: A Tool for Integrating Value Stream Mapping and Ergonomics in Manufacturing
Value stream mapping (VSM) is a lean tool aiming at waste reduction. Previous research suggests that the use of VSM may result in work intensification and thus an increased risk for the workers of developing work-related musculoskeletal
In the current study, VSM was developed to also consider physical exposure in the analyzed production system (ErgoVSM). As the VSM, ErgoVSM is based on a participatory approach. ErgoVSM was tested in a Swedish manufacturing company. The results suggest that ErgoVSM catalyzes change processes to include intervention proposals emphasizing ergonomics in addition to waste reduction. Thus, ErgoVSM appeared useful for the investigated target group of production engineers and experienced operators. The performance improvements suggested when using the ordinary VSM seemed not to be hampered by adding the ergonomics complement. However, the use of ErgoVSM was somewhat more time consuming than the use of VSM. In conclusion, ErgoVSM is suggested as a feasible tool to be used by production engineers and experienced operators for including ergonomics considerations in the rationalization process. © 2015 Wiley Periodicals, Inc.
Eru tengsl á milli félagsauðs og þjónandi forystu á sjúkrahúsum? Mat starfsfólks á íslenskum og dönskum sjúkrahúsum.

General information
State: Published
Organisations: Department of Management Engineering, Management Science, Implementation and Performance Management, University of Iceland
Authors: Edwards, K. (Intern), Gunnarsdóttir, S. (Ekstern)
Publication date: 2016
Event: Poster session presented at Mirror of the nation 2016, Reykjavik, Iceland.
Main Research Area: Technical/natural sciences

ESCO-samarbejder vinder frem i Danmark

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Siemens (DK), Statens Byggeforskningsinstitut
Authors: Jensen, J. O. (Ekstern), Nielsen, L. (Ekstern), Nielsen, S. B. (Intern)
Pages: 44-45
Publication date: 2016
Main Research Area: Technical/natural sciences

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Journal: Teknik & Miljøe
Volume: 11
Issue number: 116
ISSN (Print): 1902-2654
Ratings:
ISI indexed (2013): ISI indexed no
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Original language: English
Electronic versions:
ESCO_samarbejde_2016.pdf
Source: PublicationPreSubmission
Source-ID: 127387862
Publication: Research › Journal article – Annual report year: 2016
Essays on the Design of Contracts and Markets for Power System Flexibility

This PhD thesis consists of five essays on the economics of Power System Flexibility, a topic that has traditionally been addressed from a technical perspective by engineers, system planners, electricity industry stakeholders and energy policymakers interested in the integration of Variable Renewable Energy. While significant progress has been made in the understanding and characterization of flexibility, its economic properties and the required incentives to provide it have not been sufficiently analyzed. The present work aims at filling this gap.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis
Authors: Boscán Flores, L. R. (Intern)
Number of pages: 337
Publication date: 2016

Publication information
Publisher: Copenhagen Business School [Phd]
ISBN (Print): 978-87-93483-38-5
Original language: English
Main Research Area: Technical/natural sciences
Source: FindIt
Source-ID: 2346232222
Publication: Research › Ph.D. thesis – Annual report year: 2017

Estimating pesticide emission fractions for use in LCA: A global consensus-building effort

A practical challenge in LCA for comparing pesticide application in different agricultural practices is the agreement on how to quantify the amount emitted, while only the amount applied to the field is known. Main goal of this paper is to present an international effort carried out to reach agreement on recommended default agricultural pesticide emission fractions to environmental media. Consensual decisions on the assessment framework are (a) primary distributions are used as inputs for LCIA, while further investigating how to assess secondary emissions, (b) framework and LCA application guidelines and documentation will be compiled, (c) the emission framework will be based on modifying PestLCI 2.0, (d) drift values will be provided by German, Dutch and other drift modelers, (e) pesticide application methods will be complemented to develop scenarios for tropical regions, (f) climate, soil and application method scenarios will be based on sensitivity analysis, (g) default emission estimates for LCA will be derived from production-weighted averages, and (h) emission fractions will be reported spatially disaggregated. Recommendations for LCA practitioners and database developers are (a) LCA studies should state whether the agricultural field belongs to technosphere or ecosphere, (b) additional information needs to be reported in LCI (e.g. pesticide mass applied), (c) emissions after primary distribution and secondary fate processes should be reported, (d) LCIA methods should allow for treating the field as part of technosphere and ecosphere, (e) fate and exposure processes should be included in LCIA (e.g. crop uptake), (f) default emission estimates should be used in absence of detailed scenario data, (g) and all assumptions should be reported. The recommended pesticide emission fractions results and recommendations are presented and disseminated to strive for broad acceptance at a dedicated stakeholder workshop back-to-back with the current LCA Food 2016 conference in Dublin.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Centre de cooperation Internationale en Recherche Agronomique pour le Développement, Life Cycle Strategies, Quantis, IRSTEA ELSA -PACT, Universitat Rovira i Virgili, University of California at Berkeley
Authors: Fantke, P. (Intern), Anton, A. (Ekstern), Basset-Mens, C. (Ekstern), Grant, T. (Ekstern), Humbert, S. (Ekstern), McKone, T. E. (Ekstern), Rosenbaum, R. K. (Ekstern)
Publication date: 2016

Host publication information
Title of host publication: 10th International Conference on Life Cycle Assessment of Food 2016
Main Research Area: Technical/natural sciences
Conference: 10th International Conference on Life Cycle Assessment of Food 2016, Dublin, Ireland, 19/10/2016 - 19/10/2016
Electronic versions: Fantke_2016i.pdf
Source: PublicationPreSubmission
Source-ID: 126891599
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016
Estimating Preferences for Wind Turbine Locations - A Critical Review of Visualisation Approaches

As the amount of wind energy installed capacity keeps growing, in Europe and the world in general, the siting of wind projects near population or recreational centres becomes a frequent possibility. Therefore, it is of high interest for policy makers and developers to be able to quantify the effect of wind projects on public acceptance. Currently, one of the main drivers for acceptance of wind turbines by the public is their level of visual impacts. While recent studies have focused on estimating the welfare loss of visual impacts from wind turbines, a large share of the applied studies have used no or very simple visualisation of the actual visual impacts at stake. These studies thus rely on the cognitive skills of the respondents to imagine wind turbines of different sizes and locations; and on the prior experience people have had with wind turbines. By extending the economic model of perceived quality developed by Blomquist and Whitehead (1998), this paper provides a theoretical argument for the need of visualisations when describing valuation scenarios for respondents, as well as the relevance to correctly denote the amount of attributes of the good to be represented on the visualisation, and which visualisation techniques to utilise. Afterwards, we propose a framework for classifying different visualisation types and utilise it to classify recent studies regarding wind turbines acceptance, highlighting the lack of visualisations in recent studies, as well as the need to raise the bar on scenario descriptions for wind turbine visual impacts valuation.

General information
State: Published
Organisations: Department of Management Engineering, Systems Analysis, Danish Institute for Local and Regional Government Research
Authors: Hevia Koch, P. A. (Intern), Ladenburg, J. (Ekstern)
Number of pages: 26
Publication date: 2016

Ethical aspects of life cycle assessments of diets

Since the turn of the century a growing chorus of researchers has been espousing reduced meat and dairy intake as a partial strategy to transition towards a sustainable food system. Many of these studies have been predicated on a life-cycle assessment (LCA) methodology and though transparent in communicating their work within that framework, it has largely gone unmentioned that LCA involves a number of choices by the assessor and LCA methodology developers that are ultimately subjective. This study uses a consequential LCA of the average Danish diet in comparison to model vegetarian and vegan diets, leveraging the cultural perspectives afforded by the ReCiPe methodology, as starting point to explore the ways that subjectivity influences the LCA process and to test the robustness of the results against these different viewpoints. Mirroring earlier studies, we find vegetarian and vegan diets generally perform better environmentally compared to a standard Danish diet, but that there was minimal difference between the two no-meat options. Results were resilient to varying cultural perspectives applied in the model. LCA methodology, though loaded with value judgments, remains a dependable tool for assessing environmental dietary performance, but is less suited for estimating environmental pressures that are highly dependent on local conditions (e.g. chemical toxicity).

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Department of Environmental Engineering, Environmental Chemistry, University of Copenhagen
Authors: Goldstein, B. P. (Intern), Hansen, S. F. (Intern), Gjerris, M. (Ekstern), Laurent, A. (Intern), Birkved, M. (Intern)
Pages: 139–151
Publication date: 2016
Main Research Area: Technical/natural sciences
European mobility cultures: A survey-based cluster analysis across 28 European countries

More targeted European policies promoting green travel patterns require better knowledge on differing mobility cultures across European regions. As a basis for this, we clustered the EU population into eight mobility styles based on Eurobarometer data. The mobility styles - including, for example, "green cyclists" and "convenience drivers" - differed not only in their travel-related variables but also in their socio-economic background, IT-affinity, and life satisfaction, with green cyclist showing the highest life satisfaction and two car-oriented styles having the highest socio-economic resources. In a second step, the 28 EU member countries were clustered into six country clusters based on their representation of mobility styles. The country clusters indicate the existence of considerably different mobility cultures across the EU. Sub-regions can be identified that have highly different positions on the path towards sustainable mobility and therefore different requirements towards European platforms and support measures, e.g. for 'Sustainable Urban Mobility Plans'. The country clusters can provide a starting point for future communication and targeting of European efforts in sustainable mobility.
Evaluating robustness of a diesel-degrading bacterial consortium isolated from contaminated soil

It is not known whether diesel-degrading bacterial communities are structurally and functionally robust when exposed to different hydrocarbon types. Here, we exposed a diesel-degrading consortium to model either alkanes, cycloalkanes or aromatic hydrocarbons as carbon sources to study its structural resistance. The structural resistance was low, with changes in relative abundances of up to four orders of magnitude, depending on hydrocarbon type and bacterial taxon. This low resistance is explained by the presence of hydrocarbon-degrading specialists in the consortium and differences in growth kinetics on individual hydrocarbons. However, despite this low resistance, structural and functional resilience were high, as verified by re-exposing the hydrocarbon-perturbed consortium to diesel fuel. The high resilience is either due to the short exposure time, insufficient for permanent changes in consortium structure and function, or the ability of some consortium members to be maintained during exposure on degradation intermediates produced by other members. Thus, the consortium is expected to cope with short-term exposures to narrow carbon feeds, while maintaining its structural and functional integrity, which remains an advantage over biodegradation approaches using single species cultures.

General information
State: Published
Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Department of Environmental Engineering, Water Technologies, Poznan University of Technology, Poznan University Of Life Sciences, Polish Academy of Sciences
Authors: Sydow, M. (Ekstern), Owsianiak, M. (Intern), Szczepaniak, Z. (Ekstern), Framski, G. (Ekstern), Smets, B. F. (Intern), Ławniczak, Ł. (Ekstern), Lisiecki, P. (Ekstern), Szulc, A. (Ekstern), Cyplik, P. (Ekstern), Chrzanowski, Ł. (Ekstern)
Pages: 852-859
Publication date: 2016
Main Research Area: Technical/natural sciences

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Journal: New Biotechnology
Volume: 33
Issue number: 6
ISSN (Print): 1871-6784
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BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.67 SJR 1.065 SNIP 1.269
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.069 SNIP 1.07 CiteScore 3.07
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.994 SNIP 1.248 CiteScore 2.77
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.819 SNIP 0.988 CiteScore 2.5
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.788 SNIP 0.836 CiteScore 2.12
Evolvable Smartphone-Based Point-of-Care Systems For In-Vitro Diagnostics

Recent developments in the life-science -omics disciplines, together with advances in micro- and nanoscale technologies offer unprecedented opportunities to tackle some of the major healthcare challenges of our time. Lab-on-Chip technologies coupled with smart-devices in particular, constitute key enablers for the decentralization of many in-vitro medical diagnostics applications to the point-of-care, supporting the advent of a preventive and personalized medicine. Although the technical feasibility and the potential of Lab-on-Chip/smart-device systems is repeatedly demonstrated, direct-to-consumer applications remain scarce. This thesis addresses this limitation. After identifying system evolvability as a key enabler to the adoption and long-lasting success of next-generation point-of-care systems by favoring the integration of new technologies, streamlining the reengineering efforts for system upgrades and limiting the risk of premature system obsolescence. Among possible strategies, platform-based design represents a particularly suitable entry point to the development of evolvable systems. One necessary condition, is for change-absorbing and change-enabling mechanisms to be incorporated in the platform architecture at initial design-time. Important considerations arise as to where in Lab-on-Chip/smart-device platforms can these mechanisms be integrated, and how to implement them.

Our investigation revolves around the silicon-nanowire biological field effect transistor, a promising biosensing technology for the detection of biological analytes at ultra low concentrations. We discuss extensively the sensitivity and instrumentation requirements set by the technology before we present the design and implementation of an evolvable smartphone-based platform capable of interfacing lab-on-chips embedding such sensors. We elaborate on the implementation of various architectural patterns throughout the platform and present how these facilitated the evolution of the system towards one accommodating for electrochemical sensing. Model-based development was undertaken throughout the engineering process. A formal SysML system model fed our evolvability assessment process. We introduce, in particular, a model-based methodology enabling the evaluation of modular scalability: the ability of a system to scale the current value of one of its specification by successively reengineering targeted system modules. The research work presented in this thesis provides a roadmap for the development of evolvable point-of-care systems, including those targeting direct-to-consumer applications. It extends from the early identification of anticipated change, to the assessment of the ability of a system to accommodate for these changes. Our research should thus interest industrials eager not only to disrupt, but also to last in a shifting socio-technical paradigm.
General information
State: Published
Organisations: Department of Management Engineering, Engineering Systems, Department of Micro- and Nanotechnology, Nano Bio Integrated Systems
Authors: Patou, F. (Intern), Svendsen, W. E. (Intern), Dimaki, M. (Intern), Madsen, J. (Intern)
Number of pages: 190
Publication date: 2016

Publication information
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Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
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Relations
Projects:
Evolvable Smartphone-Based Point-of-Care Systems For In-Vitro Diagnostics
Source: PublicationPreSubmission
Source-ID: 127745229
Publication: Research › Ph.D. thesis – Annual report year: 2016

Projects:

Transport infrastructure and urban development
Department of Management Engineering
Period: 01/05/2018 → 30/04/2021
Number of participants: 4
Phd Student:
Knudsen, Elias Stapput (Intern)
Supervisor:
Pilegaard, Ninette (Intern)
van Ommeren, Jos N. (Ekstern)
Main Supervisor:
Mulalic, Ismir (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Smart Cities Accellerator
European Interreg Project with 6 municipality implementing the research findings of the CITIES project in cooperation with other universities in the area Copenhagen, Southern Sweden.
Centre for IT-Intelligent Energy Systems in Cities
Department of Civil Engineering
Department of Applied Mathematics and Computer Science
Department of Management Engineering
Period: 20/04/2018 → 20/07/2018
Number of participants: 3
Acronym: SCA
Project participant:
Heller, Alfred (Intern)
Nielsen, Per Sieverts (Intern)
Project Manager, academic:
Madsen, Henrik (Intern)
Tendering sustainable energy transitions

The overall objective of the project is to contribute to a transition toward sustainability in the energy sector of emerging economies, including sustainable development of local communities and local industries. The project will analyse the developmental implications of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) implemented in South Africa (SA) with a focus on the effects of wind power projects on local industrial development and socioeconomic development in local communities. The project will contribute to enhance the research capacity of the younger researchers involved. It will build upon and contribute to significantly advance the literature on sustainability transitions in developing countries through an innovative combination of complementary perspectives on institutional change, global value chains and infant industry development. It will draw on in-depth fieldwork carried out in SA based on qualitative research methods, such as interviews, documents, direct observations and project inventories. Through direct engagement with key policy makers and stakeholders, the project will seek to ensure that local developmental impacts are prioritized and ensured in renewable energy tendering schemes currently being implemented in SA, other countries in Sub-Saharan Africa (SSA) and internationally. The project will contribute to socially inclusive models of implementation by private companies involved in large-scale wind power projects by cooperating with the wind industry associations in Denmark and SA and through direct consultations. Finally, the project serves as a pilot research for a subsequent five year research programme, which will be up-scaled to include solar PV, concentrated solar power (CSP) and hydro-power, and additional countries in SSA, such as Ethiopia, Kenya, Ghana and Malawi.

Department of Management Engineering
UNEPTU Partnership
Systems Analysis
Department of Wind Energy
Integration & Planning
Danish Institute for International Studies
University of Cape Town
University of Stellenbosch
Period: 01/04/2018 → 30/09/2020
Number of participants: 5
Acronym: TENTRANS
Project participant:
Hansen, Ulrich Elmer (Intern)
Schaer, Caroline (Intern)
Kitzing, Lena (Intern)
Cronin, Tom (Intern)
Project Manager, academic:
Nygaard, Ivan (Intern)

Communication keyboards for people with special needs

Department of Management Engineering
Period: 01/04/2018 → 31/03/2021
Number of participants: 4
Phd Student:
Bafna, Tanya (Intern)
Supervisor:
Bækgaard, Per (Intern)
Puthusserypady, Sadasivan (Intern)
Main Supervisor:
Hansen, John Paulin (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD
Conceptual modeling of transportation and IT services for configuration systems

Department of Management Engineering  
Period: 01/03/2018 → 28/02/2021  
Number of participants: 4  
Phd Student:  
Bayer, Michael (Intern)  
Supervisor:  
Herbert-Hansen, Zaza Nadja Lee (Intern)  
Hove, Christina (Ekstern)  
Main Supervisor:  
Hvam, Lars (Intern)  

Financing sources  
Source: Internal funding (public)  
Name of research programme: Industrial PhD  
Project: PhD

Mapping micro-contexts: Informing architectural urban design and development

Department of Management Engineering  
Period: 01/03/2018 → 28/02/2021  
Number of participants: 4  
Phd Student:  
Jens, Krister (Intern)  
Supervisor:  
Jørgensen, Sune Lehmann (Intern)  
Strømann-Andersen, Jakob Bjørn (Intern)  
Main Supervisor:  
Gregg, Jay Sterling (Intern)  

Financing sources  
Source: Internal funding (public)  
Name of research programme: Industrial PhD  
Project: PhD

Implementation processes of digitalization

Department of Management Engineering  
Management Science  
Implementation and Performance Management  
Period: 01/02/2018 → 30/06/2018  
Number of participants: 2  
Implementation, Digitalization, Augmented Reality, Work environment  
Acronym: IPD  
Project participant:  
Ipsen, Christine (Intern)  
Balle, Emilie (Intern)  

Strengthening international cooperation on climate change research

Department of Management Engineering  
UNEP DTU Partnership  
Period: 01/02/2018 → 31/01/2022  
Number of participants: 2  
Acronym: SINCERE  
Project participant:  
Gregersen, Lucy Ellen (Intern)
Designing Systems Visualisations for Decision Support
Department of Management Engineering
Period: 01/02/2018 → 31/01/2021
Number of participants: 3
Phd Student:
Idrissov, Agzam (Intern)
Supervisor:
Parraguez Ruiz, Pedro (Intern)
Main Supervisor:
Maier, Anja (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Anden EU-finansiering
Project: PhD

Patient Training for Gaze Controlled Telepresence
Department of Management Engineering
Period: 01/02/2018 → 31/01/2021
Number of participants: 3
Phd Student:
Zhang, Guangtao (Intern)
Supervisor:
Bardram, Jakob Eyvind (Intern)
Main Supervisor:
Hansen, John Paulin (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsstipendium
Project: PhD

Distance management and work hubs
Implementation and employee experiences with work hubs and how to manage them across distance
Department of Management Engineering
Management Science
Implementation and Performance Management
Period: 24/01/2018 → …
Number of participants: 2
distance management, implementation, Innovation
Project participant:
Ipsen, Christine (Intern)
Nardelli, Giulia (Intern)

Relations
Activities:
From Co-located to Dispersed Work – First Experiences of Commuter Hubs as Stress Intervention
Project

Autonomous Bus Demand Modeling from Big Data
Department of Management Engineering
Consolidating and operationalizing theories of genuine public participation in large-scale engineering projects
This research project will 1) identify and analyse factors enabling (or impeding) genuine participation of general public in planning, decision making and possibly funding of large-scale engineering projects in Denmark and the associated risks (e.g. in transportation infrastructure, or energy generation and distribution), 2) test how increased public participation can be operationalized through an open-system business model by the means of active collaboration with stakeholders, improved engineering risk management and direct implementation of changes in selected pilot projects, and finally 3) develop detailed guidelines for practitioners to be used for building strong and equal partnerships in major infrastructure projects.

Department of Management Engineering

Advanced Digital Design and Design Automation in the Construction Industry
The main objective of the project is to conduct research on Advanced Digital Design, in particular Design Automation, in the context of the construction industry. This includes leveraging "Industry 4.0" approaches. The project will leverage digital capabilities to significantly improve engineering design productivity through better design coordination, higher design quality, and reduced risk during construction.

Department of Management Engineering

NCC - Manufacturing Academy of Denmark
The main objective of the project is to conduct research on Advanced Digital Design, in particular Design Automation, in the context of the construction industry. This includes leveraging "Industry 4.0" approaches. The project will leverage digital capabilities to significantly improve engineering design productivity through better design coordination, higher design quality, and reduced risk during construction.

Department of Management Engineering

NCC
Assessment of a new market structure and regulatory framework for the integration of distributed energy resources in electricity markets towards a coherent Nordic energy system

Department of Management Engineering
Period: 01/12/2017 → 06/02/2018
Number of participants: 4
Phd Student: Vasileiou, Tryfon (Intern)
Supervisor: Bergaentzlé, Claire (Intern)
Papakonstantinou, Athanasios (Intern)
Main Supervisor: Skytte, Klaus (Intern)

Financing sources
Source: Internal funding (public)

Capability transfer and upgrading in PV value chains in Sub Saharan Africa

Department of Management Engineering
Period: 01/12/2017 → 30/11/2020
Number of participants: 3
Phd Student: Davy, Elder (Intern)
Supervisor: Dhar, Subash (Intern)
Main Supervisor: Nygaard, Ivan (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)

Modelling of shared and autonomous mobility

Department of Management Engineering
Period: 01/12/2017 → 30/11/2020
Number of participants: 3
Phd Student: Papu Carrone, Andrea Vanesa (Intern)
Supervisor: Jensen, Anders Fjendbo (Intern)
Main Supervisor: Rich, Jeppe (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet

Sustainable utilisation of bioenergy in the Chinese energy system

Department of Management Engineering
Period: 01/12/2017 → 30/11/2020
Number of participants: 3
Phd Student:
Shapiro-Bengtsen, Sara Josefin (Intern)
Supervisor:
Jørgensen, Birte Holst (Intern)
Main Supervisor:
Münster, Marie (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Complexity Management at DSV A/S
Department of Management Engineering
Period: 15/11/2017 → 14/11/2020
Number of participants: 5
PhD Student:
Schorr, Franziska (Intern)
Supervisor:
Mortensen, Niels Henrik (Intern)
Mortensen, Niels Henrik (Intern)
Rahimi, Fatemeh (Intern)
Main Supervisor:
Hvam, Lars (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD
Project: PhD

Coastal Hazard Risk Reduction and Management
Department of Management Engineering
Systems Analysis
National Space Institute
Geodesy
Agency for Data Supply and Efficiency (SDFE)
Danish Coastal Authority
Danish Meteorological Institute
DHI
Skive Kommune
Ringkøbing-Skjern Kommune
Aabenraa Kommune
Helmholtz-Zentrum Geesthacht
Smith Innovation
Period: 01/11/2017 → 30/10/2020
Number of participants: 4
Acronym: COHERENT
Project participant:
Larsen, Morten Andreas Dahl (Intern)
Drews, Martin (Intern)
Sørensen, Carlo Sass (Intern)
Project Manager, academic:
Halsnæs, Kirsten (Intern)
**Value of Uncertainty: Enabling effective strategy deployment in engineering project organizations**

In this project, we argue that investigating and improving strategy implementation in engineering organizations through an risk- and uncertainty perspective will add significant value to C-level practitioners. We view strategy implementation, and its operationalization through project, program and portfolio management, as a structured management and reduction of uncertainty. As a “proof of concept” project, the project researches simple rules and visual aids for the management of uncertainty in strategy implementation.

Department of Management Engineering

Engineering Systems

Brightline Initiative

Period: 01/11/2017 → 31/12/2018
Number of participants: 4
Project participant:
- Geraldi, Joana (Intern)
- Stjerne, Iben (Intern)
- Strøm, Line Christiane Lund (Intern)

Project Manager, academic: Oehmen, Josef (Intern)

**Financing sources**

Source: Private funding (private)
Name of research programme: Brightline Initiative
Web address: http://www.brightline.org

**From analysis to intervention to real world impact in behaviour design**

Department of Management Engineering

Period: 01/11/2017 → 21/09/2021
Number of participants: 3
Phd Student: Nielsen, Camilla Kirstine Elisabeth Bay Brix (Intern)
Supervisor: Daalhuizen, Jaap (Ekstern)
Main Supervisor: Cash, Philip (Intern)

**Financing sources**

Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet

**Healthcare Design for Patient Engagement and Collaborative Care**

Department of Management Engineering

Period: 01/11/2017 → 31/10/2020
Number of participants: 4
Phd Student: Valentin-Hjorth, Julie Falck (Intern)
Supervisor: Dominguez, Maria Helena (Ekstern)
Main Supervisor: Patou, François (Intern)
Maier, Anja (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Identification of Safety and Security Cascading Risks in Cyber-Physical Systems

Department of Management Engineering
Period: 01/11/2017 → 31/10/2020
Number of participants: 4
PhD Student:
Carreras Guzman, Nelson Humberto (Intern)
Supervisor:
Lundteigen, Mary Ann (Ekstern)
Taylor, John (Ekstern)
Main Supervisor:
Kozin, Igor (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Multiple working time arrangements and work process coordination in complex health and care systems

Department of Management Engineering
Management Science
Implementation and Performance Management
International Research Institute of Stavanger
Period: 01/10/2017 → …
Number of participants: 1
Project participant:
Edwards, Kasper (Intern)
Project

Dynamic Route Planning and Decision Support in Feecier Lines

Department of Management Engineering
Period: 01/10/2017 → 30/09/2020
Number of participants: 3
PhD Student:
Hellsten, Erik Orm (Ekstern)
Supervisor:
Vilhelmsen, Charlotte (Intern)
Main Supervisor:
Pisinger, David (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Dynamic Route Planning and Decision Support in Feecier Lines

Department of Management Engineering
Period: 01/10/2017 → 30/09/2020
Number of participants: 3
PhD Student:
Cyber Resilience for the Shipping Industry (CyberShip)
The shipping industry has become more vulnerable to cyber-attacks in recent years, because of its dependence on information technology and increasingly complex networks. Cyber systems are incorporated into almost every facet of maritime operations, such as financial and human resources management, security systems, navigation (Global Navigation Satellite Systems (GNSS), Automatic Identification System (AIS), Electronic Chart Display Systems (ECDIS), etc.), communications, electronic certificates, cargo tracking, pre-arrival processing and other key systems and equipment. All maritime structures (including ships and offshore facilities) as well as the connected infrastructure (e.g. offices of shipping companies, ports etc) are vulnerable. Currently, the awareness regarding cyber security aspects is either at a very low level or completely disregarded. The issue of cyber security has been brought into the attention of the International Maritime Organization (IMO), and industry associations such as BIMCO and others. As a result of this guidelines for tackling cyber security problems have been developed. This project is aimed at providing shipping companies and regulators with a reference framework and decision support model to better cope with disruptions originating from a cyber-attack.

Department of Management Engineering
Management Science
Transport DTU
Operations Management
Department of Applied Mathematics and Computer Science
Cyber Security

Copenhagen Center for Health Technology

Period: 01/09/2017 → 31/08/2019
Number of participants: 5
Acronym: CyberShip
Project participant:
Psaraftis, Harilaos N. (Intern)
Jensen, Christian D. (Intern)
Sepúlveda Estay, Daniel Alberto (Intern)
Sahay, Rishikesh (Intern)
Project Manager, organisational:
Barfod, Michael Bruhn (Intern)

**ShipCLEAN - Energy efficient marine transport through optimization of coupled transportation logistics and energy systems analyses**

Department of Management Engineering
Management Science
Transport DTU

Operations Management
Period: 01/09/2017 → 31/12/2019
Number of participants: 1
Acronym: ShipCLEAN

Project participant:
Psaraftis, Harilaos N. (Intern)

**Automatic Decomposition of Mixed Integer Linear Programs**

Department of Management Engineering
Period: 01/09/2017 → 31/08/2020
Number of participants: 4
Phd Student:
Claussen, Jens Vinther (Intern)
Supervisor:
Lubbecke, Marco (Ekstern)
Repke, Stefan (Intern)
Main Supervisor:
Lusby, Richard Martin (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

**Climate tipping indicators for improved environmental sustainability assessment of bioplastics**

Department of Management Engineering
Period: 01/09/2017 → 31/08/2020
Number of participants: 3
Phd Student:
Fabbri, Serena (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Owsianik, Mikolaj (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

**Designing New Ways of Working in Industry 4.0**

Department of Management Engineering
Period: 01/09/2017 → 31/08/2020
Number of participants: 4
Phd Student:
Kadir, Bzhwen A (Intern)
Supervisor:  
Souza da Conceição, Carolina (Intern)
Maier, Anja (Intern)
Main Supervisor:  
Broberg, Ole (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Flexible operations research methods for health care
Department of Management Engineering
Period: 01/09/2017 → 31/08/2020
Number of participants: 3
Phd Student:  
Bödvarsdottir, Elin Björk (Intern)
Supervisor:  
Pisinger, David (Intern)
Main Supervisor:  
Stidsen, Thomas Jacob Riis (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansierede - Virksomhed
Project: PhD

Future Feeder Line Operations - Intermodal Transportation and Network Design under Uncertainty
Department of Management Engineering
Period: 01/09/2017 → 31/08/2020
Number of participants: 3
Phd Student:  
Sacramento Lechado, David (Intern)
Supervisor:  
Vilhelmsen, Charlotte (Intern)
Main Supervisor:  
Pisinger, David (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Management of product and production data
Department of Management Engineering
Period: 01/09/2017 → 31/08/2020
Number of participants: 3
Phd Student:  
Battistello, Loris (Intern)
Supervisor:  
Mortensen, Niels Henrik (Intern)
Main Supervisor:  
Hvam, Lars (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering m/virksomhed
Project: PhD
Supporting sustainable mini-grid development and local production of wind turbines using the case of Kenya

With the long-term objective to reduce poverty, stimulate economic growth and increased sustainable energy supply, the project aims to develop a market for low-cost, partly locally produced kW wind turbines for rural electrification. The project will demonstrate the technical, social and economic feasibility of integrating a kW wind turbine into a smart solar-powered mini-grid in Kenya, and aims to develop this concept into a viable business for the private companies involved, having the technical, economic and management capacity to exploit it. The expected long term impact of the project are (i) local jobs in production, installation, O&M of low cost kW turbines in mini-grids; and (ii) reduced cost of electricity provided by minigrids, benefitting disadvantaged communities. The project will bring together communities, public institutions and commercial companies.

Department of Management Engineering
UNEP DTU Partnership
Department of Wind Energy
Integration & Planning
Department of Civil Engineering
Section for Building Energy
Sustainable energy
Kenya Climate Innovation Centre
Period: 01/09/2017 → 01/09/2022
Number of participants: 5
Acronym: Kenya Miniwind
Project participant:
Hansen, Ulrich Elmer (Intern)
Cronin, Tom (Intern)
Nørgaard, Jørgen (Intern)
Other:
Hansen, Jens Carsten (Intern)
Project Coordinator:
Nygaard, Ivan (Intern)
Project

**Systems approach to the development of integrated solutions in the Nordic manufacturing industry**
Department of Management Engineering
Period: 01/09/2017 → 31/08/2020
Number of participants: 3
Phd Student:
Ramirez Hernandez, Tabea (Intern)
Supervisor:
Pigosso, Daniela Cristina Antelmi (Intern)
Main Supervisor:
Kreye, Melanie (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

**Technology Foresight for Smart Specialisation Development: The case study in development countries context**
Department of Management Engineering
Period: 01/09/2017 → 31/08/2020
Number of participants: 3
Phd Student:
Poonjan, Amonpat (Intern)
Supervisor:
Tanner, Anne Nygaard (Intern)
Main Supervisor:
Andersen, Per Dannemand (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Forskningsrådsstipendium
Project: PhD

**How to Improve the utilization of a Configuration Lifecycle Management (CLM) system**
The aim of the post-doc project is to add to the theory on scoping and setting up Configuration Lifecycle Management (CLM) systems and to study the potential benefits of applying them. A CLM-system supports the management of multi model configurations, as it covers the application of product configuration in all the different life cycle phases of a complex and highly engineered product.

Department of Management Engineering
Management Science
Engineering Design and Product Development
Operations Management
Configit A/S
Period: 14/08/2017 → 14/02/2020
Number of participants: 3
Project participant:
Myrodia, Anna (Intern)
Supervisor:
Hvam, Lars (Intern)
Mesoscopic Simulation of Multi-Modal Urban Traffic

Department of Management Engineering
Period: 01/07/2017 → 30/06/2020
Number of participants: 3
Phd Student:
Paulsen, Mads (Intern)
Supervisor:
Rasmussen, Thomas Kjær (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

OLCA-Pest
The main objective of the OLCA-Pest project is to build on current advances in life cycle inventory and life cycle impact assessment to operationalise and harmonize the emission quantification and impact characterization of pesticides in life cycle assessment (LCA) and product environmental footprinting. In current LCA practice, quantifying pesticide emissions from agricultural fields is not aligned with characterising related potential toxicological impacts on humans and different types of ecosystems. Furthermore, the pathways from pesticide application via emissions to environmental media and treated field crops to toxicity impacts are currently only partly and inconsistently covered and many relevant pesticides are currently not included. This leads to LCA results that are incomplete and often misleading and hard to interpret and this makes it impossible to assess and compare the environmental performance profiles of different pest management systems and practices.

Department of Management Engineering
Quantitative Sustainability Assessment
National Research Institute of Science and Technology for Environment and Agriculture (IRSTEA)
Institut de Recerca i Tecnologia Agroalimentaries (IRTA)
Swiss Confederation’s centre of excellence for agricultural research (Agroscope)
Ecole Supérieure d'Agricultures (ESA)
Centre International de Recherche Agronomique pour le Développement (CIRAD)
Comité Champagne (CIVC)
European Commission Joint Research Centre (JRC)
French National Institute of Agricultural Research (INRA)
Period: 08/06/2017 → 07/12/2020
Number of participants: 3
Life Cycle Assessment, Human toxicology, Ecotoxicity, Emission modelling, Impact assessment
Project participant:
Birkved, Morten (Intern)
Melero, Carlos Manuel Moraleda (Intern)
Project Coordinator:
Fantke, Peter (Intern)

Relations
Activities:
Global pesticide application scenarios for use in life cycle assessment and in chemical substitution
Project
Opportunities and Limits of New Trends in Hospital Architecture: The Case of Government Hospital, Thailand

Department of Management Engineering
Period: 01/06/2017 → 31/05/2020
Number of participants: 3
Phd Student: Prugsiganont, Supuck (Intern)
Supervisor: Nielsen, Susanne Balslev (Intern)
Main Supervisor: Jensen, Per Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Stipendie fra udlandet
Project: PhD

AMICa - Advanced Mapping of Industrial Capabilities for Climate
AMICa is a Climate-KIC Pathfinder project developing an advanced, data-driven and system-oriented industrial capability mapping platform. AMICa’s objective is to map worldwide industrial capabilities to support the development of new technologies, products and services with positive climate change impact. We took as an example case the development of sustainable biofuels.

Department of Management Engineering
Engineering Systems
Chalmers University of Technology
MASH Biotech ApS
Nordic Initiative for Sustainable Aviation (NISA)
Novozymes A/S
Climate KIC Nordic
Period: 10/05/2017 → 30/12/2017
Number of participants: 2
climatic change, capabilities, Biofuels, Sustainability, Bioenergy
Acronym: AMICa
Project Manager, academic: Maier, Anja (Intern)
Project Coordinator: Parraguez Ruiz, Pedro (Intern)

Financing sources
Source: EU research programme (public)
Name of research programme: Climate-KIC Pathfinder
Web address: http://www.climate-kic.org
Year of approval: 2017
Project

Trade in Environmentally Sound Technologies
The project aims to contribute towards sustainable, environmentally credible and inclusive value chain integration and trade in technologies, by providing support to developing countries to objectively assess and understand the opportunities, benefits and challenges of liberalized trade in environmentally sound technologies, including the EGA as an important means of implementation, and to host dialogues with a broad range of stakeholders to discuss EGA and environmental technology trade opportunities and perspectives in developing countries, and to build related capacities of developing country stakeholders.

Department of Management Engineering
UNEP DTU Partnership
African Centre for Technology Studies
University of Malaya
A Model of Big Data Utilisation in the Danish Healthcare System

Department of Management Engineering
Period: 01/05/2017 → 30/04/2020
Number of participants: 3
Phd Student:
Ivan Rehfeld, Claus (Intern)
Supervisor:
Kondo Steffensen, Sam (Intern)
Main Supervisor:
Perunovic, Zoran (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Ansat eksternt
Project: PhD

Environmental Sustainability Assessment of Advanced Agricultural Waste Technologies and Agricultural Territories

Department of Management Engineering
Period: 01/05/2017 → 30/04/2020
Number of participants: 4
Phd Student:
Vega, Giovanna Croxatto (Intern)
Supervisor:
Bruun, Sander (Ekstern)
Uellendahl, Hinrich (Intern)
Main Supervisor:
Birkved, Morten (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Environmental Sustainability Assessment of Advanced Agricultural Waste Technologies and Agricultural Territories

Department of Management Engineering
Period: 01/05/2017 → 13/08/2020
Number of participants: 4
Phd Student:
Sohn, Joshua (Intern)
Supervisor:
Goldstein, Benjamin Paul (Intern)
Kalbar, Pradip (Intern)
Main Supervisor:
Birkved, Morten (Intern)

Financing sources
Smart Load
The increasing capacity of container vessels is pressuring container terminals worldwide to improve their performance. Simple improvements of work practices are no longer a viable option even for the medium and small container terminals we find in Denmark. With this project we wish to initiate a pilot study on the possibility of improving terminal performance by exploiting the flexibility that arises from a possible collaboration between the terminal planners and the ship owners. A preliminary study, done in collaboration with APM Terminals – Cargo Service A/S (APMT) in Aarhus, has shown that giving the terminal some decision power over the arrangement of the containers in the vessel can result in improved vessel handling times. With this research application we wish to initiate a pilot project that can demonstrate the potential of this collaboration on an industrial scale. In order to do so, APMT has agreed to provide data and domain expertise to the research team at the Technical University of Denmark (DTU), and be an active partner in this project. The research team envision the use of operation research methods to optimize the new planning problems that arise from this collaboration.

Department of Management Engineering
Management Science
Transport DTU
Period: 01/04/2017 → 01/04/2018
Number of participants: 2
Acronym: SMARTLOAD
Project participant:
Larsen, Rune (Intern)
Project Manager, academic:
Pacino, Dario (Intern)
Project

BEAM-ME
The project aims at speeding up GAMS-based energy system models. The System Analysis group takes part in the project with the open source energy system model Balmoral.

Department of Management Engineering
Systems Analysis
Management Science
Operations Research
RAM-lose
German Aerospace Center (DLR)
Period: 15/03/2017 → 30/09/2018
Number of participants: 2
Balmorel, Energy System Modelling, Speed-up Models
Project ID: 82552
Project participant:
Wiese, Frauke (Intern)
Buchholz, Stefanie (Intern)
Project

Safe quality improvement in healthcare - a human centred systems engineering approach

Department of Management Engineering
Management Science
Implementation and Performance Management
Period: 01/03/2017 → 01/03/2020
Number of participants: 3
Project participant:
Where does the green economy grow? The Geography Of Nordic Sustainability Transitions (GONST)
There is no one-size-fits-all approach to greening the growth path of an economy as this depends on place-based policy and institutional settings, level of development, resource endowments and particular environmental pressure points. This research proposal addresses the place-based, context-dependent nature of the shift to green growth in the Nordic countries by asking the question: where does the green economy grow? In addressing this question, we foreground the importance of innovation, new industry formation, and radical industry transformation.

The project is based on a mixed methods approach. Quantitative techniques will be applied to analyse the importance of human capital and technological specialisation for the greening of the economy. Qualitative case studies of Nordic regions will focus on the role of institutions and account for the diversity in Nordic regional green pathways.

Participating regions will benefit from a thorough analysis of current green growth processes and the opportunities for further greening. The project in particular seeks to engage pioneering green growth regions in the case study analysis, and a full work package in the project will be focusing on the possibilities for policy-learning between participating regions. An important element here will be to distinguish between those successful practices that can be transferred between regions, and those which are context dependent.

Department of Management Engineering
Technology and Innovation Management
Aalborg University
Lund University
NIFU Nordic Institute for Studies in Innovation, Research and Education
SINTEF
University of Tampere
Period: 01/03/2017 → 01/03/2020
Number of participants: 2
Green growth, Regional development, Technological change, Innovation policy, Innovation systems
Acronym: GONST
Project participant:
Tanner, Anne Nygaard (Intern)
Faria, Lourenco (Intern)

Innovation Klimatilpasning med borgere
Department of Management Engineering
Period: 16/02/2017 → 16/02/2017
Number of participants: 2
Project participant:
Alsbjørn, Lene (Intern)
Project Manager, organisational:
Hoffmann, Birgitte (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 2,730,000.00 Danish Kroner

Manpower Planning at Danish Hospitals
Department of Management Engineering
Management Science
Operations Research
Region Sjælland, Produktion, Forskning og Innovation (PFI)
Period: 01/02/2017 → 31/12/2017
Number of participants: 1
Nurse Rostering, Integer Programming, Scheduling
Project participant:
Bagger, Niels-Christian Fink (Intern)

Environment in Manufacturing
Embedding sustainability metrics in the planning and operation of high volume production lines
Department of Management Engineering
Quantitative Sustainability Assessment
Lego Group
Period: 01/02/2017 → 15/12/2017
Number of participants: 2
Project participant:
Stotz, Philippe Maurice (Intern)
Supervisor:
Bey, Niki (Intern)

Multi-model bus Arrival Prediction with Intelligent Handling of Uncertainties
Department of Management Engineering
Period: 01/02/2017 → 30/01/2021
Number of participants: 3
Phd Student:
Petersen, Niklas Christoffer (Intern)
Supervisor:
Heckscher, Annette (Ekstern)
Main Supervisor:
Pereira, Francisco Camara (Intern)
Financing sources
Source: Internal funding (public)
Name of research programme: Ansat ekstern
Project: PhD

Disruptive technologies in design
Department of Management Engineering
Period: 01/01/2017 → 31/12/2019
Number of participants: 4
Phd Student:
Ernstsen, Sidsel Katrine (Intern)
Supervisor:
Larsen, Laurids Rolighed (Ekstern)
Thuesen, Christian (Intern)
Main Supervisor:
Maier, Anja (Intern)
Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD
Project: PhD
Integrated optimization of vehicle and driver scheduling in public transport

Department of Management Engineering
Period: 01/01/2017 → 31/12/2019
Number of participants: 6
Phd Student:
Govinda Raja Perumal, Shyam Sundar (Intern)
Supervisor:
Lusby, Richard Martin (Intern)
Petersen, Jeanne Aslak (Ekstern)
Riis, Morten (Ekstern)
Sørensen, Kasper Stengaard (Ekstern)
Main Supervisor:
Larsen, Jesper (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD
Project: PhD

Optimised Combinatorial Construction using Algorithms (OCCA)

Department of Management Engineering
Period: 01/01/2017 → 31/12/2019
Number of participants: 5
Phd Student:
Kollsker, Torkil (Intern)
Supervisor:
Rapke, Stefan (Intern)
Rapke, Stefan (Intern)
Stolpe, Mathias (Intern)
Main Supervisor:
Stidsen, Thomas Jacob Riis (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD
Project: PhD

Innogy Idealab - Dashboard for evaluation of an ideation platform

The purpose of the project is to support the development of a dashboard for the evaluation (measurement of outcomes) of an idea generation platform, i.e., Idealab by Innogy.

Department of Management Engineering
Management Science
Implementation and Performance Management

innogy
Period: 21/12/2016 → 21/12/2017
Number of participants: 1
Project ID: 82058
Project participant:
Nardelli, Giulia (Intern)

Environmental sustainability assessment of the aquaculture sector at global and national scales

Department of Management Engineering
Period: 15/12/2016 → 14/12/2019  
Number of participants: 4  
Phd Student:  
Bohnes, Florence Alexia (Intern)  
Supervisor:  
Hauschild, Michael Zwicky (Intern)  
Schlundt, Jørgen (Intern)  
Main Supervisor:  
Laurent, Alexis (Intern)  

**Financing sources**  
Source: [Internal funding (public)](public)  
Name of research programme: [Institut stipendie](DTU)  
Project: PhD

### Productivity and agglomeration
Department of Management Engineering  
Period: 15/12/2016 → 14/12/2019  
Number of participants: 3  
Phd Student:  
Pedersen, Jesper Hybel (Intern)  
Supervisor:  
Mulalic, Ismir (Intern)  
Main Supervisor:  
Fosgerau, Mogens (Intern)  

**Financing sources**  
Source: [Internal funding (public)](public)  
Name of research programme: [Forskningsrådsfinansiering](public)  
Project: PhD

### Exploration of knowledge sharing mechanism in maritime innovation networks
Department of Management Engineering  
Period: 01/12/2016 → 30/11/2019  
Number of participants: 4  
Phd Student:  
Gary, Magnus (Intern)  
Supervisor:  
Hansen, Mette Sanne (Intern)  
Kreye, Melanie (Intern)  
Main Supervisor:  
Perunovic, Zoran (Intern)  

**Financing sources**  
Source: [Internal funding (public)](public)  
Name of research programme: [Ansat eksternt](public)  
Project: PhD

### Integrating operational knowledge in design of energy efficient facilities
Department of Management Engineering  
Period: 01/12/2016 → 30/11/2019  
Number of participants: 5  
Phd Student:  
Rasmussen, Helle Lohmann (Intern)  
Supervisor:  
Gregg, Jay Sterling (Intern)  
Hartmann, Tanja Schou (Ekstern)  
Jakobsen, Arne (Intern)
Lean Risk Management in Engineering Projects

Department of Management Engineering
Period: 01/12/2016 → 30/11/2019
Number of participants: 3
Phd Student:
Willumsen, Pelle Lundquist (Intern)
Supervisor:
Welo, Torgeir (Ekstern)
Main Supervisor:
Oehmen, Josef (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

DynaStow

The use of larger vessels is increasing the planning complexity of stowage coordinators. Stowage planning main goal is to find an arrangement of the containers such that time at port is minimised. In order to do so, stowage coordinators must ensure that situations where containers going to later ports are stowed on top of containers to be discharged earlier. Such containers are called overstowing containers. A worse situation appears when overstowing containers are in between hatch-covers (metallic structures dividing the upper and lower deck). In this situation, a container terminal is forced to remove all containers above the hatch, lift the hatch itself, to then finally discharge the needed containers. Such a situation is clearly undesirable. Aside from the minimization of container moves, it is also important that the stowage plans are designed for efficient port operations. Liner shippers and container terminals, often, agree on an expected cargo handling performance (often in terms of container moves per hour). Stowage coordinators must, to the best of their ability, generate stowage plans tailored to the agreed terminal performance. This is not an easy task since cargo loaded in earlier ports can have a large negative impact on handling operations in later ports. Even though those objectives in themselves are complex to achieve, stowage coordinators also need to ensure the sea-worthiness of the vessel. Weight balance, stress forces, handling of dangerous cargo and stacking constraints are but a few examples of the rules that a stowage plan must obey. The possibility of cost reduction, by use of optimisation techniques, are not small. Consider the number of containers Maersk has moved in this year’s first quarter (ca. 2.500 thousand FFU), and assume a total of just 5% of overstowing containers. A conservative price of 60,00 USD per re-stow will result in an estimated cost of 60 mils. USD. It is easy to see that even a small percent reduction of the overstowing containers would bring savings in the order of millions.

This project has two main goals:
1. Reinforce the Danish status of being the top research country for stowage planning
2. Produce research results that can have an impact on the Danish maritime industry

Wrt. to 1) we wish to become the main authority in terms of stowage planning research in the world. Our research results so far have granted us the respect of many maritime researchers. As the main researchers on stowage planning we have the responsibility of setting the correct research standard. The amount of knowledge on stowage planning of the applicants and of the Danish maritime industry places Denmark in a unique position to do so. Wrt. 2) we believe that applied research must have an impact. We, therefore, have engaged in a partnership with Optivation, and through them, Seago Line (part of the Maersk consortium), to help us in guiding the project toward solutions tailored for the industry.
Supporting the development of robust and comparable mitigation actions through the Mitigation Action Assessment Protocol.

The World Bank has developed the Mitigation Action Assessment Protocol (MAAP) tool, aimed at achieving transparency in how mitigation actions (MA) are designed and how they compare in terms of mitigation value. The long-term goal is to have the MAAP serve as an internationally accepted system for assessing how MA are robust and ambitious enough to contribute to the achievement of mitigation targets of their relevant jurisdiction, and eventually, the trade potential and exchangeability of carbon credits. As an expansion of the MAAP tool and due to the fact that many MA that are planned to contribute to countries Nationally Determined Contributions still are at the design stage, the World Bank is in the process of developing the MAAP-Design, aimed at assessing MA at design stage. The MAAP-Design will therefore be an important tool to assess how MA at the design stage are robust and ambitious enough to contribute to the achievement of NDC goals, and national and regional climate and development strategies. In addition, in spite of numerous available MA designs, the number of implemented actions falls short of the expected and needed level of implementation. This has been attributed to a mismatch between the design of MA and expected design standards of international financiers, leading to a backlog in disbursement of readily available funds. Therefore, the MAAP-Design will also enable practitioners to compare their MA design with existing good practices, and will allow financiers to access pre-assessed quality MAs. UDP will review the MAAP-Design and provide suggestions on how the tool can be more attuned to the design phase of mitigation actions (MAs). The peer review will be based on UDP's extensive knowledge and capacity building support on mitigation actions (MA) in developing countries. The MAAP tool and MAAP-Design will be piloted in an independent approach on 20 MAs, both at design and implementation stage. Out of the 20 MA, 5 will be selected for a full assessment including coordination and site visits with the country's MA representative. This initial product will be used to showcase the MAAP tool and MAAP-Design's utility through a set of outreach activities based on UDP's extensive network of partner countries and institutions, and on specific events in coordination with the World Bank. The outreach activities will also serve as a donor outreach process with the aim to fund future activities to develop and maintain a Mitigation Actions Database based on MA assessed through the MAAP tool, and to increase the MAAP Tool's application, ease of access and visibility.

Further, dependent on the donor outreach phase's success, UDP proposes to apply the tool to a selection of 50 MAs. Lastly, to increase the tool's utility and visibility, UDP proposes to create and maintain a database of MAs assessed with the MAAP tool and MAAP-Design and make the information publicly available in a user-friendly design on a dedicated website.

The following specifies how UDP intends to carry out the three tasks described in the Terms of Reference:

1. Support the development of a version of the MAAP Tool aimed at assessing mitigation actions at the design stage.
2. Design and implement an independent assessment process for mitigation actions using the MAAP Tool.
3. Enhance the comparability of mitigation actions by providing the relevant information to different stakeholders in the form of a publicly available database.
Advanced mathematical modeling related to comprehensive energy system models

Department of Management Engineering
Period: 15/09/2016 → 18/02/2020
Number of participants: 3
Phd Student:
Buchholz, Stefanie (Intern)
Supervisor:
Gamst, Mette (Intern)
Main Supervisor:
Pisinger, David (Intern)

Financing sources
Source: Internal funding (public)

Creativity workshop facilitation in the business context

Department of Management Engineering
Period: 15/09/2016 → 14/09/2019
Number of participants: 3
Phd Student:
Wróbel, Agata Ewa (Intern)
Supervisor:
Lomberg, Carina (Intern)
Main Supervisor:
Cash, Philip (Intern)

Financing sources
Source: Internal funding (public)

Development of environmental footprints for large-scale systems

Department of Management Engineering
Period: 15/09/2016 → 14/09/2019
Number of participants: 4
Phd Student:
Leclerc, Alexandra Segolene Corinne (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Wood, Richard (Ekstern)
Main Supervisor:
Laurent, Alexis (Intern)

Financing sources
Source: Internal funding (public)

Market and Policy Design for Fossil-free Energy Systems

Department of Management Engineering
Period: 15/09/2016 → 18/01/2020
Number of participants: 3
Phd Student:
Sekamane, Jonas Khubute (Intern)
Supervisor:
Morthorst, Poul Erik (Intern)
Main Supervisor:
Skytte, Klaus (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

**Modelling of the gas system as an integrated part of the future energy system**
Department of Management Engineering
Period: 15/09/2016 → 14/09/2019
Number of participants: 3
Phd Student:
Pedersen, Rasmus Bo Bramstoft (Intern)
Supervisor:
Ravn, Hans V. (Intern)
Main Supervisor:
Münster, Marie (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

**Guidance note on assessment of transformational change**
Department of Management Engineering
UNEP DTU Partnership
Mitigation and MRV Partnership
Period: 01/09/2016 → 30/06/2017
Number of participants: 1
Project participant:
Olsen, Karen Holm (Intern)

**Science Cloud for Cities**
A Deic/Deff project developing a science cloud for research (in cities).
Centre for IT-Intelligent Energy Systems in Cities
Department of Civil Engineering
Department of Management Engineering
Aarhus University
University of Southern Denmark
Aalborg University
Period: 01/09/2016 → 16/12/2017
Number of participants: 3
Project participant:
Nielsen, Per Sieverts (Intern)
Madsen, Henrik (Intern)
Project Manager, academic:
Heller, Alfred (Intern)
Load Environment Modelling and Forecasting
Department of Management Engineering
Period: 01/09/2016 → 30/09/2017
Number of participants: 5
Phd Student: Glavind, Sebastian Tølbøll (Intern)
Supervisor: Nielsen, Bo Friis (Intern)
Sørensen, John Dalsgaard (Intern)
Thöns, Sebastian (Intern)
Main Supervisor: Faber, Michael Havbro (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Smart Maritime: Norwegian Centre for improved energy efficiency and reduced harmful emissions
Department of Transport
Transport optimisation and technique
Department of Management Engineering
Management Science
Period: 01/09/2016 → 31/08/2019
Number of participants: 1
Acronym: Smart Maritime
Project participant: Psaraftis, Harilaos N. (Intern)

Closed-Loop Aluminum Post-consumer waste recycling
Department of Management Engineering
Quantitative Sustainability Assessment
Period: 15/08/2016 → 31/01/2017
Number of participants: 3
Acronym: CLAP
Project participant: Niero, Monia (Intern)
Project Manager, organisational: Bey, Niki (Intern)
Project Manager, academic: Stotz, Philippe Maurice (Intern)

Modelling macroeconomic effects of energy saving investments
Department of Management Engineering
Period: 15/08/2016 → 14/08/2019
Number of participants: 3
Phd Student: Bjerregaard, Casper (Intern)
Supervisor: Møller, Niels Framroze (Intern)
Main Supervisor: Klinge Jacobsen, Henrik (Intern)

Financing sources
**Agil stage-gate: Ny innovationsmodel for mellemstore danske produktionsvirksomheder**

Department of Management Engineering

Management Science

Implementation and Performance Management

Dansk Industri

Gemba Innovation A/S

Period: 01/08/2016 → 31/05/2018

Number of participants: 2

Acronym: Agile Stage-Gate

Project participant:

Nardelli, Giulia (Intern)

Project Manager, organisational:

Edwards, Kasper (Intern)

**Relations**

Publications:

Værktøjskasse til Agil Stage-Gate®: Ny model for udviklingsprojekter i mellemstore virksomheder

Agil Stage-Gate®: ny model for udviklingsprojekter i mellemstore virksomheder

**Economic incentives and policy design for energy savings**

Department of Management Engineering

Period: 01/08/2016 → 31/07/2019

Number of participants: 3

Phd Student:

Wiese, Catharina (Intern)

Supervisor:

Klinge Jacobsen, Henrik (Intern)

Main Supervisor:

Pade, Lise-Lotte (Intern)

**Financing sources**

Source: Internal funding (public)

Name of research programme: Samfinansieret - Andet

Project: PhD

**Radical improvements in sustainable building renovation based on new forms of collaboration and business models**

Department of Management Engineering

Period: 01/08/2016 → 31/07/2019

Number of participants: 3

Phd Student:

Berg, Jakob Brinkø (Intern)

Supervisor:

Jensen, Per Anker (Intern)

Main Supervisor:

Thuesen, Christian (Intern)

**Financing sources**

Source: Internal funding (public)

Name of research programme: Forskningsrådsfinansiering

Project: PhD
Access to shared cars may facilitate living without a private car in the household, fewer private cars can pave the way for more sustainable transport patterns, while better opportunities to choose and combine transport modes may enhance multimodal transport chains.

Several international studies indicate positive environmental effects of car-sharing services but many of these studies are solely based on retrospective data or miss a control group.

Based on a longitudinal survey including both DriveNow users and non-users, the project will (1) examine the effects of free-floating car-sharing in the Capital Region with regard to car use and ownership and related
intentions and attitudes;
(2) monitor the awareness and use of the system; and
(3) examine possibilities for system improvements.

Department of Management Engineering
Technology and Innovation Management
Transport DTU
Period: 04/05/2016 → 30/11/2019
Number of participants: 1
Project participant:
Haustein, Sonja (Intern)
Project

Management of Maritime operations under Emission Control Regulations (MANECO)
Brief summary of project:
Air pollution from ships such as NOx and SOx is currently at the center stage of discussion by the world shipping
community and the tools of Operations Research (OR) and Management Science (MS) in reducing the environmental
externalities of maritime transport will get increased attention. Therefore education and research in the area of maritime
management under emission control regulations are needed. Both the education of engineers in maritime management
and research in operations under emission control regulations are addressed in this project. In the research part of this
project the focus will be on logistic-based (tactical and operational) measures such as routing, scheduling, and monitoring,
however in the educational part other areas of operations may be included such as disruption management, stowage and
planning. The project also includes an educational part creating a focus on maritime management which will give students
insight into management of maritime operations in order to produce graduates who can not only manage maritime
operations of companies, but also improve competitiveness. Development of courses and a project portfolio is needed in
order to enhance the student competencies within the area of maritime management. The aim is to create a profile for
maritime management to promote courses in maritime management to student and accommodate the industry need for
engineers with maritime management skills.

Department of Management Engineering
Management Science
Department of Transport

Transport optimisation and technique
Period: 02/05/2016 → 31/12/2018
Number of participants: 2
Acronym: MANECO
Project participant:
Kontovas, Christos A. (Intern)
Project Manager, academic:
Reinhardt, Line Blander (Intern)

Absolute Circular Economy (ACE) toolkit to support companies in the implementation of Circular Economy strategies from
an Absolute environmental sustainability perspective
Carlsberg Foundation Postdoctoral Fellowship in Denmark
Department of Management Engineering
Quantitative Sustainability Assessment

Carlsberg
Period: 01/05/2016 → …
Number of participants: 1
Acronym: ACE
Project applicant:
Niero, Monia (Intern)

Innovative re-making of markets and business models in a renewable energy system based on wind power
The purpose of the I-REMB project is to assess and develop the technological, market and business options that can
support the development of energy systems based predominantly on wind power. The project's aim is to mobilize
expertise from renewable energy system engineering, business economics, and economic sociology to generate
innovative design solutions to the new technical, regulatory and market contexts of fluctuating energy. For the many actors in the value chain – from generation, distribution to consumption – there are great uncertainties as to how to respond to the unclear commercial opportunities associated with the new variable RES. The conditions for facilitating a successful interaction of the technical and commercial steps towards a successful transition require new design solutions for regulations and market and non-market pricing, as well as an approach to involve existing and new actors in the energy system.

Systems Analysis
Department of Management Engineering
Energy Economics and Regulation
Aalborg University
Copenhagen Business School
Period: 01/05/2016 → 31/03/2019
Number of participants: 4
Acronym: I-REMB
Number of related Ph.D. students: 1
Project participant:
Morthorst, Poul Erik (Intern)
Skytte, Klaus (Intern)
Katz, Jonas (Intern)
Sekamane, Jonas Khubute (Intern)

Relations
Related projects:
Market and Policy Design for Fossil-free Energy Systems
Project

Benchmarking Residential Energy Consumption In Indonesia
Department of Management Engineering
Period: 01/05/2016 → 30/04/2019
Number of participants: 3
Phd Student:
Kewo, Angreine (Intern)
Supervisor:
Liu, Xiufeng (Intern)
Main Supervisor:
Nielsen, Per Sieverts (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Stipendie fra udlandet
Project: PhD

BlueSIROS – Satellite Integrated Route Optimisation Service
Department of Transport
Transport optimisation and technique
Department of Management Engineering
Management Science
Period: 01/05/2016 → 30/04/2017
Number of participants: 1
Acronym: BlueSiros
Project participant:
Psaraftis, Harilaos N. (Intern)
Project
Energy system modelling and integrated future scenario analysis of the Nordic energy and transport system through the holistic energy system tool TIME S

Department of Management Engineering
Period: 01/05/2016 → 30/04/2019
Number of participants: 4
Phd Student:
Salvucci, Raffaele (Intern)
Supervisor:
Gargiulo, Maurizio (Ekstern)
Uteng, Tanu Priya (Ekstern)
Main Supervisor:
Karlsson, Kenneth Bernard (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Greening the grid: A comparative policy analysis of South Africa and India

Department of Management Engineering
Period: 01/05/2016 → 30/04/2019
Number of participants: 4
Phd Student:
Bhamidipati, Padmasai Lakshmi (Intern)
Supervisor:
Andersen, Per Dannemand (Intern)
Hansen, Ulrich Elmer (Intern)
Main Supervisor:
Haselip, James Arthur (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Mainstreaming Climate Mitigation Actions in Sectoral and National Sustainable Development Strategies and Policies

Department of Management Engineering
Period: 01/05/2016 → 01/07/2019
Number of participants: 4
Phd Student:
Garcia Hernandez, Alma Lucia (Intern)
Supervisor:
Bolwig, Simon (Intern)
Reutemann, Tim (Intern)
Main Supervisor:
Hinostroza, Miriam L. (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Quantifying performance of Modularized Products in an ETO Company

Department of Management Engineering
Period: 01/05/2016 → 01/03/2020
Number of participants: 3
Phd Student:
Markworth Johnsen, Sara Helene (Intern)
Supervisor:
Mortensen, Niels Henrik (Intern)
Main Supervisor:
Hvam, Lars (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Smart Energy Systems and Sustainable Urban Development
Department of Management Engineering
Period: 15/04/2016 → 31/05/2017
Number of participants: 3
Phd Student:
La Greca, Simone (Intern)
Supervisor:
Morales González, Juan Miguel (Intern)
Main Supervisor:
Halsnæs, Kirsten (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

The emissions gap report by the United Nations Environment Programme is an annual scientific assessment of the shortfall between national emission reduction pledges under the United Nations Framework Convention on Climate Change and the levels required to keep global average temperature increases below 2°C, compared to pre-industrial levels.

Department of Management Engineering
UNEP DTU Partnership
Period: 04/04/2016 → 09/12/2016
Number of participants: 2
Project participant:
Puig, Daniel (Intern)
Bakhtiari, Fatemeh (Intern)
Documents:
Project

GazeIT – Accessibility by Gaze Tracking
Copenhagen Center for Health Technology
Department of Management Engineering
Technology and Innovation Management
Period: 01/04/2016 → 31/03/2021
Number of participants: 1
Acronym: GazeIT
Project participant:
Hansen, John Paulin (Intern)
Project

NSON-DK - North Sea Offshore Network - Denmark
The focal point of the NSON-DK project is how the future massive offshore wind power and the associated offshore grid development will affect the Danish power system in the transition towards a future sustainable energy system. NSON-DK is a Danish part of the North Sea Offshore and Storage Network (NSON) project framework, which has emerged from the European Energy Research Alliance (EERA) as a pioneer project framework joining nationally funded research according
The objective of the NSON-DK project is to study how the future massive offshore wind power and the associated offshore grid development will affect the Danish power system on short term, medium term and long term towards of the transition towards a future sustainable energy system.

The following research questions will have special attention in the project:
- **How will the offshore wind power development affect the variability and uncertainty of variable renewable generation in the Danish power system and neighboring systems?**
- **How will this increased variability and uncertainty from the offshore wind power development together with onshore renewable generation development influence the balancing and need for reserves in the Danish power system?**
- **How will the offshore wind power and offshore grid development influence the electricity markets in future systems with large scale energy storage and coordination of the electricity system with other energy systems (mainly heat and transport)?**
- **How will the scale and architecture of the offshore grid development influence the adequacy and security of supply in the Danish power system?**
- **Which policy instruments should be applied to support an effective and cost-efficient transition of the Danish power system combining the offshore development with energy storage and coordination between energy systems?**

**Department of Wind Energy**

**Integration & Planning**

**Department of Management Engineering**

**Energy Economics and Regulation**

**EA Energy Analysis A/S**

**Period:** 01/04/2016 → 31/03/2020

**Number of participants:** 5

**Wind power, Power systems, Offshore wind, Ancillary services, Variability, Renewables**

**Acronym:** NSON-DK

**Project participant:**
- Das, Kaushik (Intern)
- Koivisto, Matti Juhani (Intern)
- Pade, Lise-Lotte (Intern)
- Skytte, Klaus (Intern)

**Project Coordinator:**
- Sørensen, Poul Ejnar (Intern)

**Related projects:**
- TWENTIES - Transmission system operation with large penetration of Wind and other renewable Electricity sources in Networks by means of innovative Tools and Integrated Energy Solutions
- SIMBA - Simulation of balancing

**Publications:**
- **Needs for Flexibility in Energy Systems Caused by the Increasing Share of Variable Renewable Energy Generation in 2020, 2030 and 2050 Scenarios**
- **A Statistical Model for Hourly Large-Scale Wind and Photovoltaic Generation in New Locations**
- **Multi-terminal Offshore Grid for the North Sea Region for 2030 and 2050 Scenarios**
- **NSON-DK energy system scenario**
- **Impacts of offshore grid developments in the North Sea region on market values by 2050: How will offshore wind farms and transmission lines pay?**

**NSON-DK - North Sea Offshore Network - Denmark**

The focal point of the NSON-DK project is how the future massive offshore wind power and the associated offshore grid development will affect the Danish power system in the transition towards a future sustainable energy system. NSON-DK is a Danish part of the North Sea Offshore and Storage Network (NSON) project framework, which has emerged from the European Energy Research Alliance (EERA) as a pioneer project framework joining nationally funded research according to the European Commission’s Berlin model.

The objective of the NSON-DK project is to study how the future massive offshore wind power and the associated offshore grid development will affect the Danish power system on short term, medium term and long term towards of the transition towards a future sustainable energy system.
The following research questions will have special attention in the project:
- How will the offshore wind power development affect the variability and uncertainty of variable renewable generation in the Danish power system and neighboring systems?
- How will this increased variability and uncertainty from the offshore wind power development together with onshore renewable generation development influence the balancing and need for reserves in the Danish power system?
- How will the offshore wind power and offshore grid development influence the electricity markets in future systems with large scale energy storage and coordination of the electricity system with other energy systems (mainly heat and transport)?
- How will the scale and architecture of the offshore grid development influence the adequacy and security of supply in the Danish power system?
- Which policy instruments should be applied to support an effective and cost-efficient transition of the Danish power system combining the offshore development with energy storage and coordination between energy systems?

Department of Management Engineering

Systems Analysis
Period: 01/04/2016 → 31/03/2020
Number of participants: 1
Acronym: NSON-DK
Project participant:
Boscán Flores, Luis Rafael (Intern)

PEAKapp - Personal Energy Administration Kiosk application: an ICT-ecosystem for Energy Savings through Behavioural Change, Flexible Tariffs and Fun

Summary
PEAKapp targets the development of an unprecedented ICT-to-Human ecosystem to trigger lasting energy savings through behavioural change and continuous engagement, to enable increased consumption of clean and low-priced electricity from the spot market for household customers, to connect them to social networks, to motivate them through serious gaming, and to boost the efficacy of Smart Home building energy management systems by integrating their functionalities into the PEAKapp solution. With this first close-to-market-ready attempt to provide households with a dynamic electricity tariff in the EU, the door is opened for the most significant impact on the household electricity market since its liberalisation.

The ICT ecosystem will be designed to require smart meters as only hardware with respect to in-house equipment, such that the system can be implemented almost immediately, given the EU targets for smart meter roll-out. These low hardware requirements allow for a fast market uptake, and thus a noticeable impact on EU energy consumption can be experienced with almost no delay and without the need of having to equip the 230 mio dwellings in the EU with any extra efficiency hardware.

Validation of the ICT ecosystem under real life conditions in the publicly owned social housing sector will be carried out in Austria, Estonia, Sweden and Finland, and analyses of the collected data will allow for ground-breaking insights into consumer behaviour, while outstanding EU energy market analyses will derive implications for regulatory practice to better support energy efficiency goals. An outstanding market uptake strategy makes >3 electricity utilities ready-to-sign the implementation of the ICT-system, advises the European social housing sector about its benefits, and fosters European and international market uptake by distinguished exploitation activities, where the leading US stakeholder EPRI takes responsibility without funding.

DTU-MAN Focus
WP4: Customer engagement analysis and savings impact assessment
Task 4.1 Modelling consumer behaviour through econometric time-series analysis (8 mm)
WP5: Market Uptake and Transformation, Privacy and Regulatory Framework
Task 5.2 Market transformation through dynamic electricity prices - assess effects of the market price and distribution costs of electricity from consumer load shifting via PEAKapp (7 mm)
Task 5.3 Regulatory framework (2 mm) - analyse and develop regulatory framework necessary to enable full exploitation of the PEAKapp

Department of Management Engineering

Systems Analysis
DTU Climate Centre
Energy Economics and Regulation

Johannes Kepler Universität Linz
Period: 01/03/2016 → 01/03/2019
Number of participants: 3
Acronym: PEAKapp
Number of related Ph.D. students: 0
Project participant:
Integrated Baltic offshore wind electricity grid development
The offshore wind energy sector in the Baltic Sea requires coordinated transnational grid planning to realise its full growth potential. Baltic InteGrid promotes the meshed grid approach by creating a professional network for the exchange of expertise and state-of the art interdisciplinary research.

Department of Management Engineering
Energy Economics and Regulation
Department of Wind Energy
Integration & Planning
Period: 01/03/2016 → 30/09/2019
Number of participants: 5
Acronym: Baltic InteGrid
Project participant:
Pade, Lise-Lotte (Intern)
Bergaentzlé, Claire (Intern)
Boscán Flores, Luis Rafael (Intern)
Cutululis, Nicolaos Antonio (Intern)
Das, Kaushik (Intern)

URBAN
Transport policy and behaviour
Department of Management Engineering
Department of Transport
Traffic modelling and planning
University of Copenhagen
Transportministeriet
Vejdirektoratet
Dansk Industri
Kraks Fond
Incentive Partners
Period: 15/02/2016 → 15/02/2020
Number of participants: 6
Project participant:
Pilegaard, Ninette (Intern)
Mulalic, Ismir (Intern)
Hjorth, Katrine (Intern)
Mabit, Stefan Eriksen (Intern)
Ranjan, Abhishek (Intern)
Project Manager, academic:
Fosgerau, Mogens (Intern)

Financing sources
Source: Public research council
Name of research programme: Innovation Fund

Relations
Activities:
Rejsetidsvariabilitet
Publications:
Modelling the relation between income and commuting distance
Congestion in the bathtub
Press / Media items:
Detektor
Project

Dynamic optimization of total value and environmental performance: Use of real time property data for improved Facilities Management
Department of Management Engineering
Systems Analysis
Centre for Facilities Management
Quantitative Sustainability Assessment
Period: 01/02/2016 → 31/01/2019
Number of participants: 5
Phd Student:
Maslesa, Esmir (Intern)
Supervisor:
Birkved, Morten (Intern)
Hauschild, Michael Zwicky (Intern)
Hultén, Jannik (Ekstern)
Main Supervisor:
Nielsen, Susanne Balslev (Intern)
Documents:
PhD poster - KMD
Project

Implementering af forebyggende psykosociale indsatser
Department of Management Engineering
Management Science
Implementation and Performance Management
Period: 01/02/2016 → 01/09/2018
Number of participants: 3
Project ID: 81546
Project participant:
Ipsen, Christine (Intern)
Edwards, Kasper (Intern)
Project Manager, organisational:
Poulsen, Signe (Intern)
Project

Future Gas
Department of Management Engineering
Systems Analysis
Period: 01/02/2016 → 31/01/2020
Number of participants: 1
Project participant:
Nielsen, Lise Skovsgaard (Intern)
Project
FutureGas
An effective and economically efficient integration of gas, renewable based gas as well as natural gas, requires three issues to be fulfilled: 1) In an overall system context, gas should be integrated where the system benefits are highest; 2) Gas should be used optimally, that is where the economic net gains are largest taking into account the cost of possible conditioning; and 3) If needed then conditioning of gas should be carried out in the most cost-efficient way. Conditioning here refers to cleaning, upgrading, mixing and/or pressurising to achieve a desired gas quality. Of course, this reflects that the high value areas for gas utilization depend on how gas enters into the energy system. Thus, to find the most efficient and cost-competitive solutions it is crucial in an energy system perspective to address the need, possibilities and cost-effectiveness for conditioning gas to be injected into the gas grids and how different gases most economically and efficiently can be utilized. A central part of this project is therefore to model both renewables injected to the gas grid as well as alternative uses of gas in an overall system context.

The aim of the FutureGas project is twofold:
1) In an energy system context to facilitate the integration of the gas system with the power system, the district heating system and the transportation sector taking into account possible synergies. Despite the huge amounts of energy being transported through the gas grid, it is currently only loosely coupled to the rest of the energy system mainly through use of gas in CHP plants.
2) To facilitate a cost-efficient uptake of renewable gases, hereby in the longer term substituting natural gas and fossil fuels. A number of renewable gases exist, differing in their possible application in the energy system and in their costs and requirements for conditioning. The best and most cost-effective solutions for utilising and conditioning a variety of renewable gases depend on the development of the entire energy system. In FutureGas these two issues will be looked into with regard to energy system integration, gas conditioning and, finally, economic/policy perspectives. To enable this, a novel modelling framework will be developed comprising the total energy system with an international market dimension and handling risk and uncertainty. Moreover, this new framework will facilitate combined modelling of the physical energy systems with markets and policy instruments. Thus this project has a truly interdisciplinary nature. The major part of the research will be concentrated on addressing the gas supply side on conditioning of RE gases and operation of the gas grid in combination with the demand side (CHP, industry and transport) all in a system context, on developing the gas dimension in advanced system modelling and, finally, on identifying the required policy and market structures for a successful implementation.

Thus the overall vision of FutureGas is to pave the way for an effective and cost-efficient transition to an energy system independent of fossil fuels, ensuring a strong integration of gas with the entire energy system, an economically optimal conversion to renewable gases substituting natural gas in the long run and good access to gas markets for a wide range of gas producing technologies.

Department of Management Engineering
Systems Analysis
Energy Systems Analysis
Management Science
Operations Research
Energy Economics and Regulation
Novo Nordisk Foundation Center for Biosustainability
Aarhus University
Chalmers University of Technology
University of Exeter
Florence School of Regulation - European University Institute
Delft University of Technology
Danish Gas Technology Centre A/S
HMN Naturgas
Danish Energy Association
Dansk Gas Distribution
NGF Nature Energy
RAM-lose
EA Energy Analysis A/S
Hydrogen Denmark
PlanEnergi
Energinet.dk

Danish Energy Agency
Period: 01/02/2016 → 31/01/2020
Number of participants: 10
Project ID: 82524
Number of related Ph.D. students: 4
Project participant:
Pisinger, David (Intern)
Wiese, Frauke (Intern)
Sadegh, Negar (Intern)
Aryal, Nabin (Intern)
Phd Student:
Nielsen, Lise Skovsgaard (Intern)
Pedersen, Rasmus Bo Bramstoft (Intern)
Amirkhizi, Tara Sabbagh (Intern)
Buchholz, Stefanie (Intern)
Project Manager, academic:
Morthorst, Poul Erik (Intern)
Münster, Marie (Intern)

Financing sources
Source: Other public support (public)
Name of research programme: Innovation Fund Denmark
Project

Dynamic optimization of total value and environmental performance: Use of real time property data for improved Facilities Management
Department of Management Engineering
Period: 01/02/2016 → 31/01/2019
Number of participants: 6
Phd Student:
Maslesa, Esmir (Intern)
Supervisor:
Birkved, Morten (Intern)
Bolwig, Simon (Intern)
Hauschild, Michael Zwicky (Intern)
Hultén, Jannik (Ekstern)
Main Supervisor:
Jensen, Per Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD
Project: PhD

Participation in IEA ISGAN Annex 7 Smart Grid Transitions: Institutions, Markets and Consumers
The objective of Annex 7 in the International Energy Agency's (IEA) International Smart Grid Action Network (ISGAN) is to investigate smart grid transition processes in society and institutional including market changes associated with these. Using a transition framework, the Annex intends to gather information and knowledge from a cross-disciplinary field of social sciences, e.g. innovation studies, economics and sociology. The Annex is complementing technology oriented smart grid activities and can make important added value for policy makers, strategic planners, and other stakeholders in the smart grid field.

The aim of the project is to enable and strengthen Danish participation in EIA-ISGAN Annex 7 and to help disseminate knowledge on smart grids between Danish stakeholders and the ISGAN Annex 7 international community. The project includes participation in the international Annex 7 meetings. In addition to bringing Danish perspectives to International
smart grid discussions, the project will disseminate information from its international and domestic activities to Danish stakeholders. This is done through an annual Danish smart grid transition seminar and through presentations at other meetings. We expect that the Danish contribution will offer valuable new insight, be a good activity injection to the Annex, and support dialogue about future ISGAN efforts.

The general Annex 7 activities are led by Senior Researcher Klaus Kubeczko, Austrian Institute of Technology (AIT), Innovation Systems Department. Additional partners are from: Belgium, The Netherlands, Sweden, France, Italy, Canada; and Germany.

The Danish project is made possible through financial support from EUDP.

Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Economics and Regulation
Period: 01/02/2016 → 31/10/2020
Number of participants: 7
smart grid, Energy transitions, energy efficiency, socio-technical perspective, energy markets, consumer behaviour
Acronym: IEA ISGAN Annex 7: DK
Project ID: 82584
Project participant:
Bolwig, Simon (Intern)
Skytte, Klaus (Intern)
Nørregaard, Kjeld (Ekstern)
Dyck-Madsen, Søren (Ekstern)
Bergaentzlé, Claire (Intern)
Nielsen, Per Sieverts (Intern)
Katz, Jonas (Intern)

Bedre Uheldsdata
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management
Period: 01/01/2016 → 01/11/2017
Number of participants: 3
Project participant:
Janstrup, Kira Hyldekær (Intern)
Clemmensen, Mikkel Bøg (Intern)
Project Manager, academic:
Møller, Mette (Intern)

Relations
Activities:
Erfaringer med supplerende uheldsdata i Danmark
Bedre uheldsdata
Documents:
Bedre trafikuheldsdata
Project

Model til vurdering af infrastrukturreffekter på trafikuheld
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management

Systems Analysis
Period: 01/01/2016 → 31/12/2018
Number of participants: 3
Project participant:
Janstrup, Kira Hyldekær (Intern)
Pilegaard, Ninette (Intern)

Project Manager, organisational:
Møller, Mette (Intern)

Relations
Activities:
Asfaltindustriens valgmøde i Guldborgsund
Samfundsøkonomiske konsekvenser af trafiksikkerhed
Trafiksikkerhed som grundlag for bedre prioritering af vejvedligehold
Asfaltindustriens valgmøde i Odense
Workshop - Resultater fra spørgeskema
Vejens skadespoint og trafiksikkerhed - Er der behov for et nyt skadespoint, som kan benyttes som trafiksikkerhedsindikator?
Cyklistuheld – hvilken betydning har vejen, køretøjet og trafikanten
Influence of different crash characteristics on level of injury among cyclists
Sammenhængen mellem vejen, ulykker og samfundsøkonomi
Vejen og omgivelsernes betydning for trafiksikkerheden
Erfaringer med supplerende uheldsdata i Danmark
The road and its influence on bicycle accidents in Denmark
Bicycle accidents in Denmark – the contribution of cyclist behavior, the vehicle and the road
Asfaltindustriens valgmøde i Køge
Asfaltindustriens valgmøde i Aarhus

Mobilitetspotentiale for Aarhus Letbane
Department of Management Engineering
Management Science
Transport DTU
Operations Management
Operations Research

Office for Finance and Accounting
Period: 01/01/2016 → 01/01/2017
Number of participants: 5
Project participant:
Barfod, Michael Bruhn (Intern)
Kronbak, Jacob (Intern)
Larsen, Rune (Intern)
Pedersen, Thomas Ross (Intern)
Olsen, Allan (Intern)

OASIS+ / Open access catastrophe modelling driving adaptation to enable resilience in an uncertain future
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Period: 01/01/2016 → …
Number of participants: 3
Project participant:
Larsen, Morten Andreas Dahl (Intern)
Halsnæs, Kirsten (Intern)
Drews, Martin (Intern)

Role of technologies in an Energy Efficient Economy – Model-based analysis of policy measures and transformation pathways to a sustainable energy system

Department of Management Engineering
Systems Analysis

DTU Climate Centre
Period: 01/01/2016 → 01/07/2019
Number of participants: 4
Acronym: REEEM
Project participant:
Larsen, Morten Andreas Dahl (Intern)
Karlsson, Kenneth Bernard (Intern)
Drews, Martin (Intern)
Balyk, Olexandr (Intern)

Green Region for Electrification and Alternative fuels for Transport

Department of Transport
Transport policy and behaviour
Traffic modelling and planning

Region Skåne
Period: 01/01/2016 → 31/03/2019
Number of participants: 2
Acronym: GREAT
Number of related Ph.D. students: 0
Project participant:
Nielsen, Thomas Alexander Sick (Intern)
Cherchi, Elisabetta (Intern)

Addressing inorganic chemicals in life cycle impact assessment

Department of Management Engineering
Period: 15/12/2015 → 26/07/2019
Number of participants: 3
PhD Student:
Kirchhübel, Nienke (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Fantke, Peter (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD
ATIS and modal shift: the role and the effectiveness of information provision and perception

Department of Management Engineering
Period: 15/12/2015 → 14/12/2018
Number of participants: 3
Phd Student: Mehdizadeh Dastjerdi, Aliasghar (Intern)
Supervisor: Kaplan, Sigal (Intern)
Main Supervisor: Pereira, Francisco Camara (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Coherent regulatory frameworks and energy markets that facilitate the integration of variable renewable energy into the Nordic energy system

Department of Management Engineering
Period: 15/12/2015 → 09/06/2019
Number of participants: 4
Phd Student: Sneum, Daniel Møller (Intern)
Supervisor: Kitzing, Lena (Intern)
Main Supervisor: Skytte, Klaus (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)

Relations
Activities:
Smart Cities and Energy: District Energy Innovation
CampusEnergy2018
Energy, Disaster, and Resilience Workshop
Framework conditions for flexibility options in the district heating–electricity interface: A comparative study of the district heating sectors in the Nordic and Baltic countries
District energy in North-eastern universities – greener and more flexible
Norwegian University of Life Sciences
Smart regulatory framework conditions for smart energy systems? Incentives for flexible district heating in the Nordic countries
Evaluation of regulation for flexibility – a methodology
Danish case combining resilience, renewables, and district energy
Flexibility in district energy systems
Project: PhD

Machine Learning and Mobility

Department of Management Engineering
Period: 15/12/2015 → 14/12/2018
Number of participants: 3
Phd Student: Markou, Ioulia (Intern)
Supervisor:
Larsen, Allan (Intern)

Main Supervisor:
Pereira, Francisco Camara (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

**Financing the Adaptive Agricultural Programme in Jamaica**
The project is focused on developing a sustainable financing strategy for INMED’s Adaptive Agriculture Program (AAP) that allows smallholder farmers to access the program’s climate-adaptive aquaponics technology, the end result of which will be to reduce farmers’ vulnerability and improve their resilience to the impacts of climate change.

Department of Management Engineering

UNEP DTU Partnership
Period: 08/12/2015 → 01/12/2017
Number of participants: 1
Project participant:
Bakkegaard, Riyong Kim (Intern)

**Klimavenlig bygningsoverdragelse: fra byggeri/renovering til drift**
Climate friendly handover of buildings in the Municipality of Roskilde

A qualitative and action oriented study in three steps:
1. Mapping current practice
2. Seminar to discuss observations and ways forward
3. Wrap up with recommendations

The intended outcome of the project is improved work processes which will:
1. reduce the gap between predicted and actual energy consumption,
2. achieve more operational friendly buildings and
3. reduced total ownership costs.

Department of Management Engineering

Centre for Facilities Management

Systems Analysis

DTU Climate Centre

Production and Service Management

Implementation and Performance Management
Period: 01/12/2015 → 31/05/2016
Number of participants: 2
Project participant:
Jensen, Per Anker (Intern)

Project Manager, academic:
Nielsen, Susanne Balslev (Intern)

**Visual communication design for decision making during emergency situations**
Department of Management Engineering
Period: 01/12/2015 → 30/11/2018
Number of participants: 4
Phd Student:
Andersen, Emil (Intern)

Supervisor:
Kozin, Igor (Intern)
Strand, Stine (Ekstern)
Main Supervisor:
Maier, Anja (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

SCANDRIA2ACT: Sustainable and Multimodal Transport Actions in the Scandinavian-Adriatic Corridor
Department of Transport
Transport optimisation and technique
Department of Management Engineering
Management Science
Period: 20/11/2015 → 30/04/2019
Number of participants: 1
Acronym: SCANDRIA2ACT
Project participant:
Psaraftis, Harilaos N. (Intern)
Project

TENTacle- Capitalising on TEN-T core network corridors for prosperity, growth and cohesion
Department of Transport
Transport optimisation and technique
Department of Management Engineering
Management Science
Period: 20/11/2015 → 30/04/2019
Number of participants: 1
Acronym: TENTACLE
Project participant:
Psaraftis, Harilaos N. (Intern)
Project

Mobilitetsundersøgelse af arbejdspladser i Loopcity
Department of Transport
Transport policy and behaviour
Data- and Modelcenter
Department of Management Engineering
Transport DTU
Gate 21
Period: 01/11/2015 → 31/10/2016
Number of participants: 3
Acronym: MOOP
Project participant:
Warnecke, Marie-Louise (Intern)
Christiansen, Hjalmar (Intern)
Nielsen, Thomas Alexander Sick (Intern)
Project

Analysis and modelling of Engineering Systems using Data Science and Complex Networks
Department of Management Engineering
Period: 01/11/2015 → 31/10/2018
Number of participants: 5
Phd Student: Piccolo, Sebastiano (Intern)
Supervisor: Jørgensen, Sune Lehmann (Intern)
Lindemann, Udo (Ekstern)
Oehmen, Josef (Intern)
Main Supervisor: Maier, Anja (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Deciding under uncertainty: improving risk management practice in engineering projects
Department of Management Engineering
Period: 15/10/2015 → 15/12/2018
Number of participants: 4
Phd Student: Stingl, Verena (Intern)
Supervisor: Arlt, Mario (Ekstern)
Kreye, Melanie (Intern)
Main Supervisor: Geraldi, Joana (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansierede - Virksomhed
Project: PhD

Uncertainty Perception in Product Innovation Projects
Department of Management Engineering
Period: 15/10/2015 → 14/10/2018
Number of participants: 4
Phd Student: Lasso, Sarah Venturim (Intern)
Supervisor: Daalhuizen, Jaap (Ekstern)
Kreye, Melanie (Intern)
Main Supervisor: Cash, Philip (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Science Without Borders, Brasi
Project: PhD

Flex4RES - Flexible Nordic Energy Systems
The Flex4RES project investigates how an intensified interaction between coupled energy markets, supported by coherent regulatory frameworks, can facilitate the integration of variable renewable energy (VRE) in turn ensuring stable, sustainable and cost-efficient Nordic energy systems.
The primary objective of Flex4RES is to identify and assess regulatory and technical pathways towards coherent Nordic energy systems in 2050 based on strong interaction between different energy markets that ensure resilience, sustainability and efficiency.

Department of Management Engineering
Flex4RES - Flexible Nordic Energy Systems

The Flex4RES project investigates how an intensified interaction between coupled energy markets, supported by coherent regulatory frameworks, can facilitate the integration of variable renewable energy (VRE) in turn ensuring stable, sustainable and cost-efficient Nordic energy systems.

The primary objective of Flex4RES is to identify and assess regulatory and technical pathways towards coherent Nordic energy systems in 2050 based on strong interaction between different energy markets that ensure resilience, sustainability and efficiency.

Energy Economics and Regulation

Department of Management Engineering

Systems Analysis

Energy Systems Analysis

DTU Climate Centre

Risø National Laboratory for Sustainable Energy

Department of Wind Energy

Integration & Planning

KTH - Royal Institute of Technology

Norwegian University of Life Sciences

Aalto University

RAM-lose

NIFU Nordic Institute for Studies in Innovation, Research and Education

Nordic Energy Research

Period: 01/10/2015 → 31/03/2019

Number of participants: 17


Acronym: Flex4RES

Project ID: 82511

Project participant:

Kitzing, Lena (Intern)
Karlsson, Kenneth Bernard (Intern)
Pizarro Alonso, Amalia Rosa (Intern)
Balyk, Oleandr (Intern)
Bolwig, Simon (Intern)
Pade, Lise-Lotte (Intern)
Soysal, Emilie Rosenlund (Intern)
Katz, Jonas (Intern)
Olsen, Ole Jess (Intern)
Bergaentzlé, Claire (Intern)
Sneum, Daniel Møller (Intern)
Ravn, Hans V. (Intern)
Boscán Flores, Luis Rafael (Intern)
Relations
Activities:
Smart Cities and Energy: District Energy Innovation
CampusEnergy2018
Energy, Disaster, and Resilience Workshop
Panel discussion: Results and take-home messages from Sustainable Energy Systems 2050
Intraday Market Asymmetries
District energy in North-eastern universities – greener and more flexible
Norwegian University of Life Sciences
Smart regulatory framework conditions for smart energy systems? Incentives for flexible district heating in the Nordic countries
Evaluation of regulation for flexibility – a methodology
Energy Policy in the Nordic Electricity Market: A power system with high penetration of wind energy
Danish case combining resilience, renewables, and district energy
Flexibility for Variable Renewable Energy Integration in the Nordic Energy System: Danish &amp; Nordic perspectives
Flexibility in district energy systems
A power system with high penetration of intermittent energy: how to regulate the marked
FlexEm 2050 - Flexible Electricity Markets for Decarbonized Systems
Publications:
Can diverging regulatory approaches hinder the deployment of renewable energy? The case of offshore wind in Europe
Integrated energy systems modelling
District heating as a source of flexibility in the Nordic electricity market
Regulatory Barriers for Flexible Coupling of the Nordic Power and District Heating Markets
Barriers for district heating as a source of flexibility for the electricity system
Smart grid Transitions: System solutions and consumer behaviour
Market Prices in a Power Market with more than 50% Wind Power
The Future of Flexible Energy Systems - Flex4RES intro
From passive to active actors in the power market - Increasing the value of wind
Use of electric vehicles or hydrogen in the Danish transport sector in 2050?
Flexibility-friendly support policies:
Design of grid tariffs in electricity systems with variable renewable energy and power to heat
Regulatory barriers for activating flexibility in the Nordic-Baltic electricity market
Intraday market asymmetries — A Nordic example
Flexible electricity markets for a decarbonised energy system
Decarbonising the Finnish Transport Sector by 2050: Electricity or Biofuels?
Flex4RES status
Project

Omkostninger i Godstransportkæder
Department of Management Engineering
Management Science
Operations Management
Transport DTU
Strategic Advising
Period: 01/10/2015 → 31/08/2017
Number of participants: 2
Project ID: 35438
Project Manager, academic: Kronbak, Jacob (Intern)
Working partner: Henriques, Michael (Intern)

Relations
Related projects:
Mitigating and reversing the side-effects of environmental legislation on Ro-Ro shipping in Northern Europe

Documents:
Omkostninger i Godstransportkæder

Flexibility for Variable Renewable Energy Integration in the Nordic Energy Systems
Flex4RES will assess how to integrate and consolidate different energy markets to make a solid base to anchor resilient, sustainable, cost-efficient and coherent Nordic energy systems in 2050.

Department of Management Engineering
Systems Analysis
Period: 01/10/2015 → 31/03/2019
Number of participants: 1
Acronym: Flex4RES
Project participant:
Boscán Flores, Luis Rafael (Intern)

Danish energy policy includes ambitious targets for energy savings that are important for reducing CO2-emissions and the dependency of fossil fuels. Large saving potentials exist, however, excluding the properties of energy supply with regard to marginal fuels and marginal capital costs some may lead to socio-economic in-optimal solutions. The project develops methods and models to address both energy saving and energy supply to ensure optimality in investments on both sides simultaneously. Dynamic aspects of costs curves and energy system modelling will be essential.

The research project running 2015-2018, will examine what makes Danish households and companies invest in energy saving solutions.

The objective of the PhD project is to understand key parameters related to energy saving and energy supply. This includes:
- Clarify the value of various types of energy savings linking to the energy supply fuels and technology costs.
- Building a tool to compare saving cost curves with supply cost curves in order to find trade-off between these when reaching certain renewable energy targets or fossil fuel reductions.
- Extending the energy system optimisation model Balmorel, to include energy saving investments and additional end-use sectors.
- Analyse different policy scenarios with the expanded Balmorel model.

Department of Management Engineering
Systems Analysis
Energy Systems Analysis

SAVE-E, Energy Efficiency, Cost curves, Energy Savings
Acronym: SAVE-E
Project participant:
Baldini, Mattia (Intern)
**Relations**

Publications:
- Modeling of electricity savings in the Danish household sector using Balmorel
- Trade-offs between Energy Efficiency improvements and additional Renewable Energy supply: A review of international experiences
- Optimal trade-offs between energy efficiency improvements and additional renewable energy supply: A review of international experiences
- Consistent cost curves for identification of optimal energy savings across industry and residential sectors
- Consumer’s Attitude Towards Investments in Residential Energy-Efficient Appliances: How End-User Choices Contribute to Change Future Energy Systems
- Pathways to Carbon Neutral Industrial Sectors: Integrated Modelling Approach with High Level of Detail for End-use Processes
- Households’ hourly electricity consumption and peak demand in Denmark
- Pathways to Carbon Neutral Industrial Sectors: Integrated Modelling Approach with High Level of Detail for End-use Processes
- Modelling of electricity savings in the Danish households sector: from the energy system to the end-user

Documents:
- PhD_project_description
- Project

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**Assessing Life Cycle Impacts of Bioplastics from Dicarboxylic Acids**

Department of Management Engineering
Period: 01/10/2015 → 30/09/2018
Number of participants: 3
Phd Student: Ögmundarson, Ólafur (Intern)
Supervisor: Herrgard, Markus (Intern)
Main Supervisor: Fantke, Peter (Intern)
Financing sources: Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

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**Complexity Management at Rockwool**

Department of Management Engineering
Period: 01/10/2015 → 30/03/2019
Number of participants: 4
Phd Student: Trattner, Alexandria Lee (Intern)
Supervisor: Andersen, Bjørn Rici (Ekstern)
Herbert-Hansen, Zaza Nadja Lee (Intern)
Main Supervisor: Hvam, Lars (Intern)
Financing sources: Source: Internal funding (public)
Name of research programme: Industrial PhD
Project: PhD

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Department of Management Engineering
Period: 01/10/2015 → 31/01/2019
Number of participants: 3
Phd Student:
Baldini, Mattia (Intern)
Supervisor:
Juul, Nina (Intern)
Main Supervisor:
Klinge Jacobsen, Henrik (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

IEA Wind Task 26: Cost of Wind Energy
Task 26 provides information on cost of wind energy in order to understand past and present trends and to anticipate future trends. By using consistent, transparent methodologies, the Task can understand how wind technology compares to other generation options within the broader electric sector.

Department of Management Engineering
Systems Analysis
International Energy Agency
National Renewable Energy Laboratory
Lawrence Berkeley National Laboratory
EA Energy Analysis A/S
Offshore Renewable Energy Catapult
JRC
Fraunhofer Institute for Wind Energy and Energy System Technology (IWES)
Norwegian Water Resources and Energy Directorate
Deutsche WindGuard Consulting GmbH
New Energy and Industrial Technology Development Organisation

Swedish Energy Agency
Period: 01/10/2015 → 30/09/2018
Number of participants: 1
wind energy, cost of wind, levelised cost of electricity, Offshore wind, onshore wind
Acronym: IEA Wind Task 26
Project participant:
Kitzing, Lena (Intern)

Relations
Activities:
IEA Wind TCP Report Launch Event (Wind Task 26)
Project

Operationel videndeling som organisatorisk kapabilitet
Department of Management Engineering
Period: 01/10/2015 → 30/04/2019
Number of participants: 3
Phd Student:
Jørgensen, Rasmus (Intern)
Supervisor:
Ipsen, Christine (Intern)
Main Supervisor:
Edwards, Kasper (Intern)
Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansierede - Virksomhed
Project: PhD

Optimization of operations in public transportation
Department of Management Engineering
Period: 01/10/2015 → 30/09/2018
Number of participants: 4
Phd Student:
Farina, Federico (Intern)
Supervisor:
Larsen, Allan (Intern)
Roberti, Roberto (Intern)
Main Supervisor:
Røpke, Stefan (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansiered - Andet
Project: PhD

Optimization of timetables in integrated public transport planning
Department of Management Engineering
Period: 01/10/2015 → 30/09/2018
Number of participants: 4
Phd Student:
Fonseca, Joao Filipe Paiva (Intern)
Supervisor:
Roberti, Roberto (Intern)
Røpke, Stefan (Intern)
Main Supervisor:
Larsen, Allan (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Sustainability Practice Theory and practice of soft side requirements of organizations that determine successful implementation of Design for Sustainability
Department of Management Engineering
Period: 01/10/2015 → 30/09/2018
Number of participants: 4
Phd Student:
Ali, Faheem (Intern)
Supervisor:
Bey, Niki (Intern)
McAlone, Tim C. (Intern)
Main Supervisor:
Boks, Casper (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Stipendie fra udlandet
Project: PhD
Developing Community Resilience and Adaptation to Climate Change

technical assistance related to building the capacity and resilience of the coastal community to adapt to climate change and improve food security through the establishment of sustainable livelihoods and development of private sector financing.

Department of Management Engineering
UNEP DTU Partnership
Period: 30/09/2015 → 31/12/2017
Number of participants: 1
Project participant:
Bakkegaard, Riyong Kim (Intern)

Videnskabelig udredning om skifergas

Department of Transport
Transport policy and behaviour
Period: 01/09/2015 → 31/01/2016
Number of participants: 1
Project participant:
Nielsen, Thomas Alexander Sick (Intern)

Initiative for Climate Action Transparency

Department of Management Engineering
UNEP DTU Partnership
Verified Carbon Standard
World Resource Institute
Period: 01/09/2015 → 01/03/2019
Number of participants: 1
Acronym: ICAT
Project participant:
Olsen, Karen Holm (Intern)

Relations
Activities:
ICAT Methodological Framework - Framework Guide (Journal)
ICAT Transformational Change Guidance (Event)
ICAT Sustainable Development Guidance (Journal)

Initiative for Climate Action Transparency

The Initiative aims to facilitate effective decision making and policy design, rooted in credible data. The Initiative will provide tools for policymakers and stakeholders to collect more robust and consistent data on emissions, mitigation and adaptation efforts, capacity building and support. Better availability and quality of data will allow for assessment of the impact and effectiveness of domestic climate policies and set in motion an upward spiral of ambition and implementation. In addition to providing the guidance and tools for policy evaluation, the Initiative will create a space for countries to share their experiences and lessons learned.

ICAT is designed to finance activities at the country, regional and global levels to drive immediate and long-term impacts that will result in sustained improvements to the administrative, legislative and institutional transparency infrastructure within countries. The activities will include guidance and other supporting tools, technical assistance, and regional and international networking through peer exchange.

Department of Management Engineering
UNEP DTU Partnership
Period: 01/09/2015 → 30/09/2019
Number of participants: 1
Project participant:
Effective Implementation of Sustainability Approaches
Department of Management Engineering
Period: 01/09/2015 → 31/08/2018
Number of participants: 4
PhD Student:
Stewart, Raphaëlle Marie Marianne (Intern)
Supervisor:
Boks, Casper (Ekstern)
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Bey, Niki (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Impact Assessment of University Research
Department of Management Engineering
Period: 01/09/2015 → 31/08/2018
Number of participants: 3
PhD Student:
Woltmann, Sabrina (Intern)
Supervisor:
Ersbøll, Bjarne Kjær (Intern)
Main Supervisor:
Alkærsg, Lars (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Integrated Energy and Macroeconomic Modelling
Department of Management Engineering
Period: 01/09/2015 → 31/12/2018
Number of participants: 3
PhD Student:
Andersen, Kristoffer Steen (Intern)
Supervisor:
Termansen, Lars Brømsøe (Ekstern)
Main Supervisor:
Klinge Jacobsen, Henrik (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Modelling the Macroeconomic Effects of Energy Saving investments
Department of Management Engineering
Period: 01/09/2015 → 31/03/2016
Number of participants: 3
PhD Student:
Temere, Dawit Sisay (Intern)
Supervisor:
Møller, Niels Framroze (Intern)
Main Supervisor:
Klinge Jacobsen, Henrik (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Radical innovation of sustainable building
Department of Management Engineering
Period: 01/09/2015 → 05/04/2019
Number of participants: 4
Phd Student:
Koch-Ørvad, Nina (Intern)
Supervisor:
Berker, Thomas (Ekstern)
Koch, Christian (Intern)
Main Supervisor:
Thuesen, Christian (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Analysis of high frequency (*smart meter*) energy consumption data
Department of Management Engineering
Period: 01/08/2015 → 31/07/2018
Number of participants: 3
Phd Student:
Tureczek, Alexander Martin (Intern)
Supervisor:
Madsen, Henrik (Intern)
Main Supervisor:
Nielsen, Per Sieverts (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Modelling of Transport Systems in Energy System Modelling Tools
Department of Management Engineering
Period: 01/07/2015 → 30/06/2018
Number of participants: 4
Phd Student:
Tattini, Jacopo (Intern)
Supervisor:
Gargiulo, Maurizio (Ekstern)
Yeh, Sonia (Ekstern)
Main Supervisor:
Karlsson, Kenneth Bernard (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
**Modelling, Transport Fuels and Future Scenarios for the Danish Energy System**

Department of Management Engineering  
Period: 01/07/2015 → 28/10/2018  
Number of participants: 4  
Phd Student: Venturini, Giada (Intern)  
Supervisor: Gallachóir, Brian Pádraig Ó (Ekstern)  
Karlsson, Kenneth Bernard (Intern)  
Main Supervisor: Münster, Marie (Intern)  

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Samfinansieret - Andet  

**Relations**  
Activities:  
69th Semi-Annual ETSAP Meeting  
Project: PhD

**Queueing and Optimization Models for Hospital Patient Flow**  
Department of Management Engineering  
Period: 01/07/2015 → 30/06/2018  
Number of participants: 4  
Phd Student: Andersen, Anders Reenberg (Intern)  
Supervisor: Nielsen, Bo Friis (Intern)  
Reinhardt, Line Blander (Intern)  
Main Supervisor: Stidsen, Thomas Jacob Riis (Intern)  

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Samfinansierede - Virksomhed  
Project: PhD

**Mitigating and reversing the side-effects of environmental legislation on Ro-Ro shipping in Northern Europe**  
The main objective of this project is to identify and assess possible technical, operational, regulatory and financial measures for the mitigation and reversal of the negative repercussions of environmental legislation to the market shares of Ro-Ro shipping in Northern Europe. The project builds upon prior research by the Principal Investigator and his colleagues in recent years and will be under the umbrella of Maritime DTU. The project is funded by the Danish Maritime Fund.  

Department of Transport  
Transport optimisation and technique  
Period: 15/06/2015 → 14/06/2017  
Number of participants: 4  
Maritime Industry  
Project participant:  
Psaraftis, Harilaos N. (Intern)  
Kontovas, Christos A. (Intern)  
Kronbak, Jacob (Intern)  
Zis, Thalis (Intern)  
Project
The topic of the sub-project is to investigate the networking between biotech and bioenergy companies and transfer of technology between industries, especially in Denmark, to date. It is well-known that bioenergy in Denmark is often closely connected to the agricultural sector. Compared to this, the connection and interplay with the biotech industry is less illuminated. The connections between the bioenergy sector and biotech industry can be expected to be of high importance for the future competitiveness of new bioenergy solutions as well as wider industrial biotechnology industry both within Denmark and in the global markets. However, there is need of more systematic insight and better understanding of innovation activities and networks between biotech actors and bioenergy actors. The main approach will be network analysis based on data such as joint patents and collaboration in publicly subsidized R&D programs. The purpose of the proposed research is to analyze the Danish energy innovation system its dynamics and development trajectory. The contribution is identification of interaction dynamics between innovation systems and the role of the functions in shaping that co-evolution. These research findings will have implications for RDI and energy policy in addition to the contribution to literature on innovation systems.

Department of Management Engineering
Technology and Innovation Management

Project Half Double
Department of Management Engineering
Production and Service Management
Engineering Systems Group
Aarhus University
Implement Consulting Group

Net-Sights: Network insights for collaborative sustainable production
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Net-Sights: Network insights for collaborative sustainable production
The goal of this project is an open-source and data-driven platform to provide companies, governmental agencies, and research organisations with tools to proactively identify new opportunities for inter-organisational collaboration through cutting-edge network thinking, e.g. for sustainable production. Net-Sights is supported by Industriens Fond and works closely with State of Green, CLEAN, and a number of manufacturing organisations.
Modelling the Effect of Emission Control Measures
Department of Management Engineering
Period: 01/05/2015 → 06/01/2020
Number of participants: 4
PhD Student:
Bregnbæk, Christa Møllenbach (Intern)
Supervisor:
Brandt, Jørgen (Ekstern)
Yi, Wang (Ekstern)
Main Supervisor:
Karlsson, Kenneth Bernard (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Definition of a generic decision making framework and design of an Open Decision Support Platform
The research activity is addressing the definition of the overall decision theoretical and methodical framework to structure and facilitate decision processes when different decision alternatives are available and when the available information are subject to uncertainty and/or are incomplete, thus providing a robust tool to rank those alternatives in accordance with their consequences on sustainability, benefits and risks. Moreover, the framework shall facilitate the introduction of new information, changes in preferences and models and expert opinions with associated uncertainties. Based on the developed theoretical framework integrating quantitative assessment of risk and sustainability, the architecture of an Open Platform for the storage of information and models, the organisation of an analysis of models as well as the presentation of results of decision analyses shall be developed.
The research activity is part of the joint GDSI project aiming at supporting decision makers from industry and public authorities.

Department of Civil Engineering
Section for Structural Engineering

Quantitative Sustainability Assessment
Period: 01/04/2015 → 01/03/2017
Number of participants: 2
Risk Analysis, sustainability, Decision making, decision support tool, LCA, climate change, Uncertainty Quantification, Reliability Engineering
Project participant:
Miraglia, Simona (Intern)
Main Supervisor:
Faber, Michael Havbro (Intern)
Project
The Adaptation Finance Gap Report
The 2016 Adaptation Gap Report assesses the difference between the financial costs of adapting to climate change in developing countries and the amount of money actually available to meet these costs – a difference known as the “adaptation finance gap”. Like the 2014 report, the 2016 report focuses on developing countries, where adaptation capacity is often the lowest and needs the highest, and concentrates on the period up to 2050.

Department of Management Engineering
UNEP DTU Partnership
Period: 01/04/2015 → 30/06/2016
Number of participants: 3
adaptation, finance, climate change
Project participant:
Bee, Skylar (Intern)
Project Manager, organisational:
Olhoff, Anne (Intern)
Project Manager, academic:
Puig, Daniel (Intern)

Relations
Related projects:
UNEP Adaptation Gap Report
Publications:
The Adaptation Finance Gap Update - with insights from the INDCs
Documents:
50313 - UNEP GAP report 2016_web 6_6_2016
Project
Network-based insights for innovation and decision making support
This project is the result of a collaborative effort between DTU’s Office for Innovation and Sector Services, who funded this initiative, and the Engineering System Group from the Department of Management Engineering at DTU. One of the outputs is a web-based platform containing interactive data dashboards for DTU's knowledge landscape and DTU's inter-organisational landscape.

Department of Management Engineering
Production and Service Management
Engineering Systems Group
Office for Innovation & Sector Services
Period: 02/03/2015 → 24/06/2015
Number of participants: 6
network analysis, innovation, Orbit
Project Manager, organisational:
Molzen, Jan Eiersted (Intern)
Project Manager, academic:
Parraguez Ruiz, Pedro (Intern)
Maier, Anja (Intern)
Working partner:
Kruse, Stine (Intern)
Holck, Ane (Intern)
Project Coordinator: Rich, Christine (Intern)

NAMA for Sustainable Charcoal in Cambodia
technical assistance related to developing appropriate private financing for a Nationally Appropriate Mitigation Action (NAMA) tackling the current barriers to sustainable charcoal production

Department of Management Engineering
UNEP DTU Partnership
Period: 01/03/2015 → 01/03/2017
Number of participants: 1
Project participant:
Bakkegaard, Riyong Kim (Intern)

INDC development in Rwanda and Swaziland
Technical Assistance from UNEP DTU Partnership to help 27 LDCs develop their INDCs. Main responsibility over Rwanda and Swaziland

Department of Management Engineering
UNEP DTU Partnership
Period: 01/03/2015 → 31/12/2015
Number of participants: 1
Project participant:
Bakkegaard, Riyong Kim (Intern)

Fostering the use of renewable energies for heating and cooling
The progRESSsHEAT project aims at assisting local, regional, national and EU political leaders in developing policy and strategies to ensure a quick and efficient deployment of renewables in heating and cooling networks. The project’s aim is in line with the objectives of the Renewable Energy Directive and the Energy Performance of Buildings Directive that require Member States to develop ambitious policies as regards the use of renewable energy sources and energy efficiency in heating and cooling networks. progRESSsHEAT is intended to support the market uptake of existing and emerging renewable electricity, heating and cooling technologies. More specifically, the project helps policy makers develop
integrated, effective and efficient policy strategies aimed at achieving a fast and strong penetration of renewable and efficient heating and cooling systems. This includes the analysis of cross-sectoral effects between renewables and energy efficiency measures in industrial heat and cold, waste heat, heating and cooling in buildings and district heating. Together with six local authorities in six target countries across Europe (Austria, Germany, Czech Republic, Denmark, Portugal, Romania), heating and cooling strategies will be developed through a profound analysis of (1) heating and cooling demand and future developments, (2) long-term potential of renewable energies and waste heat in the regions, (3) barriers & drivers and (4) a model-based assessment of policy intervention in scenarios up to 2050. The established local energy advisory tool EnergyPRO will be used for the local studies and further developed to appropriately reflect district heating and cooling. The final versions for the investigated regions will be handed over to the authorities. In the target countries, progRESsHEAT will support the implementation of national heating and cooling plans which have to be released by member states by the end of 2015. The plans will include a policy outlook on how the potentials identified by the comprehensive assessment will be achieved. progRESsHEAT will assist national policy makers in implementing suitable policies with a model-based quantitative impact assessment of local, regional and national policies up to 2050. Policy makers and other stakeholders are strongly considered in the process. They will be offered the opportunity to learn from the experience of other players and gain deep understanding of the impact of policy instruments and their specific design. They are involved in the project via policy group meetings, workshops, interviews and webinars dedicated to policy development assistance, capacity-building and dissemination. The project is supported by the Horizon 2020 programme of the European Union.

Department of Management Engineering
Systems Analysis
Vienna University of Technology
Fraunhofer Institute for Systems and Innovation Research ISI
Institute for Resource Efficiency and Energy Strategies - IREES GmbH
OÖ Energiesparverband
ee energy engineers GmbH
Gate 21
Instituto de Engenharia Mecanica e Gestao Industrial - INEGI
Agentia Pentru Management ul Energiei si Protectia Mediului Brasov - ABMEE
City of Litomerice
Energy Cities, the European association of local authorities in energy transition
Period: 01/03/2015 → 01/10/2017
Number of participants: 6
Acronym: progRESsHEAT
Project participant:
Karlsson, Kenneth Bernard (Intern)
Petrovic, Stefan (Intern)
Kitzing, Lena (Intern)
Ben Amer-Allam, Sara (Intern)
Salvucci, Raffaele (Intern)
Project Coordinator:
Münster, Marie (Intern)

Relations
Related projects:
Geographical representations of renewable energy Systems
Strategic research centre for 4th Generation district heating technologies and systems

Roadmap to Nationally Appropriate Mitigation Actions in the Livestock Sector of Honduras and Nicaragua
Facilitating a shift towards alternative livestock farming practices, which increase farm productivity, reduce greenhouse gases emissions and foreseen climate change adaptation needs.

Department of Management Engineering
UNEP DTU Partnership
Sustainable path creation for innovative value chains for organic waste products
The project will address the potential for value added and improved sustainability in the valorisation of organic waste streams, residual feedstock and by-products by analysing value chains inside and across different sectors of the bioeconomy. We will analyse a number of industrial cases from different parts of the bioeconomy and collaborate with highly relevant industry actors and technology experts. The project will help policymakers better govern and regulate the organic waste and residue (OW) industry and the industry actors to identify and exploit new opportunities in the bioeconomy.

The objectives of the project are to:
• Map industrial capabilities and research and human resources in the OW related industries, and consider whether and where policy intervention may be needed.
• Help industrial actors to identify possible pathways to increase their rate of innovation and value added from OW related activities.
• Carry out life cycle assessments and comparative analyses of environmental performance of OW value chains and selected case studies to help government and companies to select environmentally beneficial resources, products and production processes.
• Assess how the regulatory framework influences the management of organic waste streams in Norway and in the other Scandinavian countries and how the governance systems supports innovation, industrial development and sustainability.

Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Lund University
NIFU Nordic Institute for Studies in Innovation, Research and Education
Østfold Forskning
Norwegian University of Science and Technology
Period: 01/03/2015 → 28/02/2019
Number of participants: 2
Bioeconomy, Waste, value chain
Acronym: SusValueWaste
Number of related Ph.D. students: 0
Contact person:
Bolwig, Simon (Intern)
Project participant:
Gregg, Jay Sterling (Intern)

Integrating Supply Chain Hot Spot Analysis and Business Risk Management
Department of Management Engineering
Period: 15/02/2015 → 11/02/2019
Number of participants: 3
Phd Student:
Colley, Tracey Anne (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Birkved, Morten (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Privatist
Project: PhD
**Slow On the Bottle - Enjoy the Road (SOBER)**
Looking at the relationship between explicit attitudes towards drunk driving, implicit attitudes towards drunk driving and intention of drunk driving behavior.

Department of Transport  
Transport policy and behaviour  
Period: 01/02/2015 → 30/12/2017  
Number of participants: 4  
Acronym: SOBER  
Project participant:  
Møller, Mette (Intern)  
Sømhovd, Mikael Julius (Ekstern)  
Siebler, Frank (Ekstern)  
Project Manager, academic:  
Martinussen, Laila Marianne (Intern)

**Financing sources**  
Source: Public research council  
Name of research programme: Tryg Fonden  
Web address: [http://www.trygfonden.dk/](http://www.trygfonden.dk/)  
Year of approval: 2014

**Sustainable path creation for innovative value chains for organic waste products**
Department of Management Engineering  
Systems Analysis  
DTU Climate Centre  
Energy Systems Analysis  
Period: 01/02/2015 → …  
Number of participants: 1  
Acronym: SusValueWaste  
Project participant:  
Solér, Ola (Intern)

**Adding the Ambidextrous Approach to Lean**
Department of Management Engineering  
Period: 01/02/2015 → 31/01/2018  
Number of participants: 7  
PhD Student:  
Møller, Christina Villefrance (Intern)  
Supervisor:  
Edwards, Kasper (Intern)  
Nardelli, Giulia (Intern)  
Main Supervisor:  
Ipsen, Christine (Intern)  
Examiner:  
Jacobsen, Peter (Intern)  
Crevani, Lucia (Ekstern)  
Vendele, Morten Thanning (Ekstern)

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Eksternt finansieret virksomhed  
Relations
Activities:
MADE Ph.D. konference
3rd Scandinavian Conference Industrial Engineering and Management
MADE Phd konference
4th scandinavian academy of Industrial Engineering and Management
Project: PhD

Analysis of the role of designers self-identity and behavior on design teams for performance improvement
Department of Management Engineering
Period: 01/02/2015 → 31/01/2018
Number of participants: 7
Phd Student:
Kunrath, Kamila (Intern)
Supervisor:
Li-Ying, Jason (Intern)
Li-Ying, Jason (Intern)
Main Supervisor:
Cash, Philip (Intern)
Examiner:
Alkærsg, Lars (Intern)
Sneders, Dirk (Ekstern)
Torlind, Peter (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Science Without Borders, Brasi
Project: PhD

Assessing the Capabilities of Advanced Risk Methods for Engineering Systems Management
Department of Management Engineering
Period: 01/02/2015 → 02/05/2018
Number of participants: 6
Phd Student:
Tegeltija, Miroslava (Intern)
Supervisor:
Kozin, Igor (Intern)
Main Supervisor:
Oehmen, Josef (Intern)
Examiner:
Thuesen, Christian (Intern)
Sahlin, Ulrika (Ekstern)
Steinert, Martin (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

CITIES
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Period: 01/02/2015 → 31/01/2017
Number of participants: 1
Project participant:
Auctions for Renewable Energy Support: Effective use and efficient implementation options

Auctions, as a competitive and market-based mechanism, are on the verge of becoming a prevailing feature in support policies for renewable energy in Europe. A comprehensive assessment of auctions and their suitability for renewable support in Europe is urgently needed to facilitate their successful design and cost-efficient implementation. Auctions have the potential to significantly improve the performance of renewable electricity support in Europe, but there are potential pitfalls and difficulties to be avoided. AURES combines dedicated, detailed and target-oriented analysis of auctions and their interactions with other energy policy mechanisms and markets with capacity building of policy makers and market participants. The project identifies and evaluates suitable auction design options and their effects under different market conditions using tailored theoretical, empirical, experimental, and model-based approaches, and so develops best practices and policy recommendations for future auction design. Building on worldwide experiences with auctions in energy policy and other industries and on close cooperation with ongoing auction implementation cases in Europe, a strong knowledge base will be developed, enabling policy makers and market participants to make informed decisions. This knowledge base will be processed in a flexible policy support tool that provides policy makers with tailor-made information suited to their specific situation and policy preferences. By facilitating an intense and continuous stakeholder dialogue and by establishing a knowledge sharing network via workshops, webinars, bilateral meetings, and expert consultations, the project will serve as capacity building platform. The project consortium consists of eight renowned public institutions and private firms representing seven European countries and includes some of the leading energy policy experts in Europe, with an impressive track record of successful research and coordination projects.

The project is supported by EU Horizon 2020. It is co-ordinated by DTU Management Engineering. There are 8 partners from 7 European countries. Start January 2015, Duration 3 years.

Department of Management Engineering
Systems Analysis
Energy Systems Analysis
Energy Economics and Regulation
Fraunhofer Institute for Systems and Innovation Research
University of Exeter
Ecofys Germany GmbH
CONCITO
CSIC
Technische Universität Wien
Takon GmbH - Spieltheoretische Beratung
Period: 01/01/2015 → 31/12/2017
Number of participants: 8
Acronym: AURES
Project participant:
Skytte, Klaus (Intern)
Klinge Jacobsen, Henrik (Intern)
Wendring, Paul (Intern)
Soysal, Emilie Rosenlund (Intern)
Islam, Marco (Intern)
Project Coordinator:
Kitzing, Lena (Intern)
Morthorst, Poul Erik (Intern)
Mora Alvarez, David Fernando (Intern)

Relations
Publications:
Policy memo 1: Secondary objectives in auctions
Auctions for renewable energy support - Taming the beast of competitive bidding
Policy memo 2: Pre-qualifications and penalties
Recommendations on the role of auctions in a new renewable energy directive
Experiences with auctions for renewable energy support
Auctions for Renewable Support in Denmark: Instruments and lessons learnt
Implementation of Auctions for Renewable Energy Support in the Netherlands and Denmark: A cooperation case study
Implementation of Auctions for Renewable Energy Support in Poland: a Case Study

Project

**Development of the Pathways for the Sustainable Energy For All Energy Efficiency Objective**
Modeling of future energy efficiency and renewable energy pathways to meet the 2030 UN SE4ALL objectives

Department of Management Engineering

Systems Analysis

DTU Climate Centre

Energy Systems Analysis

Energy Research Centre of the Netherlands

Period: 01/01/2015 → 30/11/2015

Number of participants: 7

energy efficiency, Renewable energy, energy access, TIAM

Acronym: SE4ALL-C2E2

Project participant:

Karlsson, Kenneth Bernard (Intern)

Bolwig, Simon (Intern)

Balyk, Oleksandr (Intern)

Solér, Ola (Intern)

Pérez, Cristian Hernán Cabrera (Intern)

La Greca, Simone (Intern)

Project Manager, academic:

Gregg, Jay Sterling (Intern)

Project

**SAVE-E Energy Savings: Closing the Energy Efficiency Gap**

Plans to reduce consumption of fossil fuels and hence emissions of CO2 include substitution to renewable energy sources, increased use of electricity and considerable efficiency improvements. Numerous studies have analysed and shown the feasibility of substitution to - and integration of - renewable energy sources. However, further studies have proven the existence of the energy-efficiency gap (EEG) and experience from various support and promotion policies have revealed that the EEG is hard to overcome. On the basis of these findings the aim of this project is to identify relevant factors influencing the EEG and to derive recommendations on how to surmount the EEG. An economic engineering approach is used to identify potentials of efficiency improvements. Based on this, we conduct a comprehensive micro-economic analysis of energy-saving investment behaviour of industries and households, i.e. identifying barriers for adoption and incentive schemes to resolve them. Combining potentials, barriers and incentives, strategies for implementing targeted improvements are developed and the trade-off between efficiency improvements and supply from renewable energy sources analysed. To evaluate macro-economic effects of the investments in savings a small macroeconomic model with detailed energy specifications is developed. Using this model, effects on growth, employment and public finances from using various incentive schemes are quantified.

The objectives of the project are to:

- Identify and quantify technical, economic and social barriers for potential energy savings.
- Analyse implementation strategies, evaluate incentives schemes, and find optimal trade-offs between efficiency improvements and additional renewable energy supply.
- Evaluate macro-economic effects of efficiency improvements and alternative incentive schemes.
- Contribute to development of methods and theory in the intersection of energy systems, behavioural economics, energy economics and stochastic programming areas.

Department of Management Engineering

Systems Analysis

Energy Systems Analysis

DTU Climate Centre

Management Science
Dansk Energi
University of Copenhagen
Roskilde University
Statens Byggeforskningsinstitut
Simon Fraser University
Norwegian University of Science and Technology
Danish Energy Agency
Rockwool International

Gate 21
Period: 01/01/2015 → 31/12/2018
Number of participants: 9
Energy economics savings optimisation
Acronym: SAVE-E
Project ID: 42-82508
Number of related Ph.D. students: 6
Project participant:
Henningsen, Geraldine (Intern)
Møller Andersen, Frits (Intern)
Pade, Lise-Lotte (Intern)
Juul, Nina (Intern)
Pisinger, David (Intern)
Bolwig, Simon (Intern)
Petersen, Sebastian Christoph (Intern)
Trivella, Alessio (Intern)
Project Coordinator:
Klinge Jacobsen, Henrik (Intern)

Relations
Publications:
Danish household load profiles and the effect of savings for appliance categories
Demand-side management
Modeling of electricity savings in the Danish household sector using Balmorel
Trade-offs between Energy Efficiency improvements and additional Renewable Energy supply: A review of international experiences
Optimal trade-offs between energy efficiency improvements and additional renewable energy supply: A review of international experiences
Documents:
Project description
Project

Green REgion for Alternative fuels for Transport
The GREAT project will make TEN-T Scandinavian-Mediterranean Corridor between Hamburg and Oslo/Stockholm one of the first to meet the EU’s directive for alternative fuels. The project will contribute to the decarbonisation of the transport sector, and therefore has the potential to make the corridor an EU best-practice example on how to meet environmental and climate challenges. The unique combination of regional public authorities and private companies working together creates opportunities for new and dynamic developments.

The project takes a holistic approach to promote all kinds of alternative fuels for road transport. It targets end users in a unique collaboration between the public sector, private providers of alternative fuels and vehicle manufacturers.

The project will highlight the business models of alternative fuels infrastructure to speed up the decarbonisation of road transport.

The overall goal is to reduce fossil emissions by establishing a strongly increased market demand for alternative fuels transport solutions by ensuring access to supply over the long distances between metropolises in northern Europe.
The successful introduction of cleaner transportation solutions on a large scale remains critical to the current European Union goals for reducing reliance on fossil fuels and their effect on the environment.

**GREAT** is divided into the following activities:

- Activity 1: Project Management
- Activity 2: Communication and Dissemination
- Activity 3: Implementation of pilot infrastructure - E-Mobility
- Activity 4: Implementation of pilot infrastructure – LNG
- Activity 5: Study – Policy Measures
- Activity 6: Study – Business Models
- Activity 7: Study – Evaluation, Assessment and Future Development

DTU is leader of Activity 7.

**Department of Management Engineering**

**Technology and Innovation Management**

**Transport DTU**
- Period: 01/01/2015 → 31/03/2019
- Number of participants: 1
- Acronym: GREAT
- Project participant:
  - Haустein, Sonja (Intern)

**Hvidbog om arbejdsmiljørådgivning**

**Department of Management Engineering**

**Production and Service Management**

**Implementation and Performance Management**

**Aalborg University**

**Roskilde University**
- Period: 01/01/2015 → 01/07/2015
- Number of participants: 1
- Project participant:
  - Seim, Rikke (Intern)

**Relations**
- Activities:
  - Fremtidens arbejdsmiljørådgivning

**Development of Risk Management Strategies Regarding the Public Perception of Engineering Systems: The example of Wind Power in Denmark**

**Department of Management Engineering**
- Period: 01/01/2015 → 02/07/2018
- Number of participants: 4
- Phd Student:
  - Johansen, Katinka (Intern)
- Supervisor:
  - Clausen, Niels-Erik (Intern)
- Ladenburg, Jacob (Ekstern)
- Main Supervisor:
  - Borch, Kristian (Intern)

**Financing sources**
- Source: Internal funding (public)
- Name of research programme: Industrial PhD
- Project: PhD
Integrated optimization of wind-farm layout and cable routing

Department of Management Engineering
Period: 01/01/2015 → 16/04/2018
Number of participants: 7
Phd Student:
Fischetti, Martina (Intern)
Supervisor:
Kristoffersen, Jesper Runge (Ekstern)
Vranceanu, Iulian (Ekstern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Lusby, Richard Martin (Intern)
Labbé, Martine (Ekstern)
Vigo, Daniele (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD
Project: PhD

Engineering Systems Design in Healthcare

Department of Management Engineering
Period: 15/12/2014 → 23/09/2018
Number of participants: 3
Phd Student:
Thorpe, Julia Rosemary (Intern)
Supervisor:
Forchhammer, Hysse Birgitte (Ekstern)
Main Supervisor:
Maier, Anja (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD

Integration of boundaries for selected planetary threads into life cycle assessment

Department of Management Engineering
Period: 15/12/2014 → 28/05/2018
Number of participants: 3
Phd Student:
Ryberg, Morten (Intern)
Supervisor:
Owsianiak, Mikolaj (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Intelligent Composition of Buffer Times in Railway Scheduling

Department of Management Engineering
Period: 15/12/2014 – 04/04/2018
Number of participants: 6
PhD Student: Cerreto, Fabrizio (Intern)
Supervisor: Harrod, Steven (Intern)
Main Supervisor: Nielsen, Otto Anker (Intern)
Examiner: Pereira, Francisco Camara (Intern)
Krasemann, Johanna Törnquist (Ekstern)
Preston, John (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Cost action FP1404 - Fire safe use of bio-based building products
Department of Management Engineering
Production and Service Management
Risk Research Group
Implementation and Performance Management
Department of Civil Engineering
Section for Building Design
Period: 05/12/2014 – 04/12/2018
Number of participants: 2
Acronym: FP1404
Project participant: Markert, Frank (Intern)
Jomaas, Grunde (Intern)

Enhancing Creativity - Metacognitive Training for Innovation Practitioners’?
Department of Management Engineering
Period: 01/12/2014 – 16/04/2018
Number of participants: 6
PhD Student: Valgeirsdóttir, Dagný (Intern)
Supervisor: Li-Ying, Jason (Intern)
Main Supervisor: Onarheim, Balder (Intern)
Examiner: Hansen, John Paulin (Intern)
Ball, Linden (Ekstern)
Runco, Mark A. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Modelling use of biomass and waste in future energy systems
Department of Management Engineering
Period: 01/12/2014 → 30/04/2018
Number of participants: 4
Phd Student:
Pizarro Alonso, Amalia Rosa (Intern)
Supervisor:
Pisinger, David (Intern)
Ravn, Hans V. (Intern)
Main Supervisor:
Münster, Marie (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Application of Product Configuration Systems in Engineering Companies
Department of Management Engineering
Period: 15/11/2014 → 06/03/2018
Number of participants: 6
Phd Student:
Kristjansdottir, Katrin (Intern)
Supervisor:
Mortensen, Niels Henrik (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Thuesen, Christian (Intern)
Anisic, Zoran (Ekstern)
Jensen, Lars Jepsen (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet

Relations
Publications:
Application of Product Configuration Systems in Engineering Companies
Project: PhD

Application of Product Configuration Systems in Engineering Companies
Department of Management Engineering
Period: 15/11/2014 → 14/11/2017
Number of participants: 6
Phd Student:
Kristjansdottir, Katrin (Intern)
Supervisor:
Mortensen, Niels Henrik (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Thuesen, Christian (Intern)
Anisic, Zoran (Ekstern)
Jensen, Lars Jepsen (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Documents:
PhD_Katrin_Kristjansdottir
BSU Phase II Partnership between Sokoine University of Agriculture and a Consortium of Danish Universities

Department of Management Engineering
UNEP DTU Partnership
Sokoine University of Agriculture
Københavns Universitet
Period: 01/11/2014 → 31/10/2016
Number of participants: 1
Project participant:
Wangel, Arne (Intern)

Financing sources
Source: Public research programme (public)
Name of research programme: DANIDA Building Stronger Universities in Developing Countries Phase 2
Documents:
InceptionReport_SUA_CDU

Bystruktur og cyklisme fase I.
Department of Transport
Transport policy and behaviour
Naturstyrelsen
Region Hovedstaden
University of Copenhagen
Period: 01/11/2014 → 31/12/2014
Number of participants: 1
Project participant:
Nielsen, Thomas Alexander Sick (Intern)

Managing Cyber Risk and Security in the Global Supply Chain
Department of Management Engineering
Period: 01/11/2014 → 16/04/2018
Number of participants: 6
Phd Student:
Sepúlveda Estay, Daniel Alberto (Intern)
Supervisor:
Khan, Omera (Intern)
Main Supervisor:
Larsen, Jesper (Intern)
Examiner:
Oehmen, Josef (Intern)
Urciuoli, Luca (Ekstern)
Wieland, Andreas (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)

Relations
Activities:
Massachusetts Institute of Technology
Publications:
Managing cyber-risk and security in the global supply chain: a systems analysis approach to risk, structure and behaviour
"Go cycling Denmark" is a campaign based project with a variety of promotional activities to encourage Danes to cycle (more). The campaign's overall objective is to reach a 1% increase in the number of bicycle trips nationwide. Promotional activities include among others an application for smartphones, which is a digital cycling coach that encourages cycling by setting realistic goals, registering cycling trips, and following-up on the goals.

The project runs over three years and will then be evaluated with regard to the effect on cycling (effect evaluation), the impact on health and economy and the process. DTU is responsible for the effect evaluation. The effect evaluation is based on four data sources:

1. Repeated surveys on the awareness of the campaigns, mobility behaviour and attitudes in a sample of the total population
2. Data of the cycling app and online questionnaires to app users
3. Data of the Danish national travel survey
4. Documentation of all campaign activities (time, regional distribution)

Spatial and temporal variations in the campaign activity will be related to cycling frequency based on the different data sources as a basis for the effect analysis.

Global Opportunities for Danish SMEs in Emerging Markets: Strategies and Methods for Adaptive Product Development
Many Danish companies realise that the growth potential relies on a successful entry into the emerging markets, such as China, Brazil, India, Latin America, and Africa.
There are tremendous amount of opportunities to do business in more innovative ways in emerging markets. Do you face challenges in developing business for your company in emerging markets or adapting your products to these new markets?
The purpose of this project is to accelerate the growth of Danish start-ups and SMEs with regard to their global expansion into emerging markets through establishing new growth strategy and methods to support: understanding of product requirements, product development processes, business models, and pathways for networked resources.
The project is financed with 4.000.000 DKK from the Danish Industry Foundation (Industriens Fond) and runs over a three year period. It will involve a number of researchers from the Department of DTU Management Engineering.
Distance management - how to ensure performance and productivity

Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Period: 01/10/2014 → 30/06/2015
Number of participants: 2
Project participant:
- Ipsen, Christine (Intern)
- Poulsen, Signe (Intern)

Udvikling af vejledningsmateriale og kurser vedr. CSM-RA

Department of Management Engineering
Production and Service Management
Engineering Systems Group
Risk Research Group

Period: 01/10/2014 → 30/09/2015
Number of participants: 1

railway, Risk assessment, hazard analysis

Acronym: CSM-RA
Project ID: 81470
Project participant:
- Duijm, Nijs Jan (Intern)

Financing sources
Source: Other public support (public)
Name of research programme: Danish Transport Authority, framework agreement with DTU
Amount: 400,000.00 Danish Kroner
Year of approval: 2014

Documents:
- Metoder til systematisk fareidentifikation_DTU rapport

Risk analysis: hazardous goods and freight train restrictions in the Danish fixed links

The Danish Transport Authority and operators of the Danish fixed links (Øresund, Storebælt and Femern) have requested DTU to assess the risk of freight trains, possibly carrying hazardous goods (i.e. RID-classified goods), using the fixed links in close distance to passenger trains. At present, restrictions are in place, which prohibit freight trains and passenger trains to be in tunnel tubes simultaneously, which leads to a decrease of the transport capacity.

The risk analysis focusses on the risk to passengers in passenger trains due to freight trains being in the tunnels simultaneously, and will not address the risk to disruption of the transport due to damage to the infrastructure, because this is already an accepted risk for freight trains passing the fixed links.

The purpose of the risk assessment is to provide insights into the changes in risk when restrictions for simultaneous presence of freight trains and passenger trains in the same tunnel tube are changed (and where several options are possible) and what safety measures might be beneficial for reducing risks ALARP (As Low As Reasonably Practicable) when restrictions are relaxed.

Department of Management Engineering
Production and Service Management
Engineering Systems Group
Risk Research Group
Implementation and Performance Management
Traffic modelling and planning

Period: 01/10/2014 → 31/03/2015
Number of participants: 5
Risk analysis, hazardous goods, railway, tunnel
Acronym: RATT
Project ID: 81469
Project participant:
Markert, Frank (Intern)
Dederichs, Anne Simone (Intern)
Alva, Wilson Ulises Rojas (Intern)
Prato, Carlo Giacomo (Intern)
Project Manager, academic:
Duijm, Nijs Jan (Intern)

Financing sources
Source: Other public support (public)
Name of research programme: Danish Transport Authority, framework agreement with DTU
Amount: 600,000.00 Danish Kroner
Year of approval: 2014

Ulykkesanalysemodel for BAR sosu

Department of Management Engineering
Production and Service Management
Risk Research Group
Period: 01/10/2014 → 01/07/2015
Number of participants: 1
Project ID: 81457
Project participant:
Jørgensen, Kirsten (Intern)

Agglomeration, productivity and sorting

Department of Management Engineering
Period: 01/10/2014 → 28/02/2017
Number of participants: 3
Phd Student:
Hop, Jack Zagha (Intern)
Supervisor:
Mulalic, Ismir (Intern)
Main Supervisor:
Fosgerau, Mogens (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Attractiveness of Public Transport Systems in a Metropolitan Setting

Department of Management Engineering
Period: 01/10/2014 → 16/04/2018
Number of participants: 6
Phd Student:
Ingvardson, Jesper Bláfoss (Intern)
Supervisor: Kaplan, Sigal (Intern)
Main Supervisor: Nielsen, Otto Anker (Intern)
Examiner: Rich, Jeppe (Intern)
Axhausen, Kay W. (Ekstern)
Wilson, Nigel H. M. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansierede - Virksomhed
Project: PhD

Sustainable Decision Support and Transport Infrastructure Assessment - Integration of sustainable planning criteria and feasibility risk assessment
Department of Transport
Period: 01/10/2014 → 29/02/2016
Number of participants: 4
Phd Student: Pryn, Marie Ridley (Intern)
Supervisor: Gudmundsson, Henrik (Intern)
Leleur, Steen (Intern)
Main Supervisor: Salling, Kim Bang (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Evaluation and Development of proposals on the CDM EB's Sustainable Development Tool
The project comprises an analysis of the EB’s SD Tool and SD provisions of other flexible mechanisms, an analysis of the host countries views on the suitability and practicability of the EB’s SD tool as well as a discussion of the pro’s and con’s of the tool and recommendations for it improvement.

Department of Management Engineering
UNEP Risø Centre
Period: 15/09/2014 → 15/06/2015
Number of participants: 3
Project ID: 82260
Number of related Ph.D. students: 1
Project participant:
Olsen, Karen Holm (Intern)
Fenhann, Jørgen Villy (Intern)
Boodoo, Zyaad (Intern)

Buildings for Smart Energy Cities
Centre for IT-Intelligent Energy Systems in Cities
Department of Civil Engineering
Section for Indoor Climate and Building Physics
Department of Management Engineering
Systems Analysis
Assessment of the necessary economic incentives for economic viability of the Hysol technology in the Kingdom of Saudi Arabia, Chile and Mexico.

Innovative Configuration for a Fully Renewable Hybrid CSP Plant

Renewable energies are often criticized for not being able to produce supply power to the electrical grid in a manner that is stable, firm and reliable. This difficulty can find a proper and viable solution through hybrid CSP/biomass plants. The market is showing a strong interest in hybrid technologies for power generation. For instance; the American company eSolar (owned by General Electric) has established an alliance with the Chinese company Penglai, in order to develop CSP/biomass technology, sharing turbines and other infrastructure, reducing costs and producing energy throughout the whole day.

The aim of HYSOL Project is to become the European reference in competition to this and other initiatives ongoing in the CSP/biomass global market. The HYSOL Project focusses on overcoming the CSP technology limitations to increase its contribution in the global electric market, hybridising with biomass energy to achieve 100 % renewable and sustainable energy, and providing a stable and reliable power independently of meteorological circumstances.

GENERAL OBJECTIVE
The main added value of the hybridisation concept will be the achievement of the Europe Strategic Energy Technology plan (SET-Plan), which is the market, the industry and the European Union goal on energy matters: self-producing firm renewable energy with an optimal cost-efficiency ratio.

The present proposal focuses on the study, the design, the pre-industrial scale demonstration of around 2,5MWth and the optimisation of an innovative configuration based on a new HRS (gas-molten salt) and an AGT simulator implemented in an existing CSP plant. In addition, gas fuel used in the AGT simulator will be produced from biomass considering the environmental sustainability factor; therefore, the hybrid installation will become a full renewable plant.

Systems Analysis
Energy Systems Analysis
Department of Management Engineering
Energy Economics and Regulation
Risø National Laboratory for Sustainable Energy
Cobra Energia - Technology & Innovation

HYSOL, CSP, hybrid solar power, biogas, Renewables integration, Financial Feasibility
Acronym: HYSOL project
Project participant:
Baldini, Mattia (Intern)
Project Manager, organisational:
Skytte, Klaus (Intern)
Project Manager, academic:
Nielsen, Lars Henrik (Intern)
Working partner:
Pérez, Cristian Hernán Cabrera (Intern)

Relations
Udvikling af værktøj til brug i Strategisk arbejdsmiljøarbejde i ældreforvaltningerne i danske kommuner

Department of Management Engineering
Production and Service Management

Implementation and Performance Management
Period: 01/09/2014 → 31/12/2015
Number of participants: 3
Project participant:
Edwards, Kasper (Intern)
Seim, Rikke (Intern)
Poulsen, Signe (Intern)

Relations
Activities:
BarSOSU workshop i København: Udvikling af værktøj til strategisk arbejdsmiljøarbejde
BarSOSU workshop i Aalborg: Udvikling af værktøj til strategisk arbejdsmiljøarbejde
BarSOSU workshop i Odense: Udvikling af værktøj til strategisk arbejdsmiljøarbejde

Publications:
Survey af Danske kommuners indsats overfor MSB og analyse af samarbejdet omkring MSB i 3 udvalgte kommuner

Kommunal Ejendomscenterdannelse
An investigation of the process of centralizing FM in Danish Municipalities.

Department of Management Engineering
Production and Service Management
Centre for Facilities Management

Fagforbundet FOA
Period: 01/09/2014 → 01/03/2015
Number of participants: 2
FM, Municipalities, Public, Management
Project ID: 81467
Project participant:
Nielsen, Susanne Balslev (Intern)
Jensen, Per Anker (Intern)

Managing the risks associated with climate change in the hydropower industry in Nicaragua
The project, funded by CIDA through OLADE, seeks to estimate climate change-related hazards, exposure and vulnerability for the hydropower industry in Nicaragua.

UNEP Rise Centre
Department of Management Engineering
UNEP DTU Partnership
Period: 01/09/2014 → 31/08/2015
Number of participants: 3
Adaptation to climate change, Hydropower
Project participant:
Naswa, Prakriti (Intern)
Haselip, James Arthur (Intern)
Project Manager, academic:
Puig, Daniel (Intern)
Relations
Related projects:
Managing the risks associated with climate change in the oil and gas industry in Colombia
Publications:
Adaptación al cambio climático en el sector hidroeléctrico nicaragüense
Documents:
Adaptation to climate change in Nicaragua's hydropower industry
Project

Managing the risks associated with climate change in the oil and gas industry in Colombia
The project, funded by CIDA through OLADE, seeks to estimate climate change-related hazards, exposure and vulnerability for the oil and gas industry in Colombia. It gives high-resolution probabilistic estimates of precipitation, temperature (maximum and minimum) and wind speed, and combines them with semi-quantitative information about industry, socio-economic and geographic parameters, to estimate climate change-related risks for the industry.

UNEP Rise Centre
Department of Management Engineering
UNEP DTU Partnership
Period: 01/09/2014 → 31/08/2015
Number of participants: 3
Adaptation to climate change, Oil and gas, Downscaling, Probabilistic estimates
Project participant:
Haselip, James Arthur (Intern)
Naswa, Prakriti (Intern)
Project Manager, academic:
Puig, Daniel (Intern)

Relations
Publications:
Adaptation to climate change in Colombia's oil and gas industry
Documents:
Adaptation to climate change in Colombia's oil and gas industry
Project

Development of Knowledge Management System on Energy Efficiency
The idea of developing a Knowledge Management System (KMS) on Energy Efficiency is to enable policy makers, energy practitioners and end users to have quick and seamless access to relevant information. The key function of the KMS is to allow the user to search and retrieve useful information based on filtered queries. The purpose of the system is to gather as many points of information as possible regarding energy efficiency and store them in a knowledge database. Then it will provide all the necessary tools for computerized collection and the ability to connect with other databases. End users will obtain relevant insights and ideas appropriate to their work from the KMS through advance searching capabilities. The process will be more effective through the use of tags, which are machine-understandable and so the system can be actively involved in assisting the end user to find relevant information.

One of the primary outcomes of the KMS is to improve the planning for, and follow-up on, energy efficiency initiatives based on information-sharing and dialogue between the energy efficiency community and other stakeholders. This outcome will be achieved through two activities:
1. Creating a knowledge management system where users can access current information on energy efficiency; and
2. Building knowledge and sharing experiences among the network of organisations and experts involved in energy efficiency.

Department of Management Engineering
UNEP DTU Partnership
Semantic Web Company
Period: 01/09/2014 → …
Number of participants: 2
energy efficiency, knowledge management, Energy
Acronym: KMS
Project participant:
Tsakiris, Aristeidis (Intern)
Farrell, Timothy Clifford (Intern)

**Relations**

**Activities:**
World Sustainable Energy Days 2016
Project

**Cargo-mix optimisation**

Department of Management Engineering  
Period: 01/09/2014 → 01/02/2018  
Number of participants: 6  
PhD Student:  
Christensen, Jonas Mark (Intern)  
Supervisor:  
Psaraftis, Harilaos N. (Intern)  
Main Supervisor:  
Pacino, Dario (Intern)  
Examiner:  
Larsen, Allan (Intern)  
Alvarez-Valdés, Ramón (Ekstern)  
Andersson, Henrik (Ekstern)

**Financing sources**

Source: Internal funding (public)  
Name of research programme: Forskningsrådsfinansiering  
Project: PhD

**Environmental sustainability assessment of bio-products based on agricultural crop and crop residue feedstocks**

Department of Management Engineering  
Period: 01/09/2014 → 16/04/2018  
Number of participants: 6  
PhD Student:  
Corona, Andrea (Intern)  
Supervisor:  
Hauschild, Michael Zwicky (Intern)  
Main Supervisor:  
Birkved, Morten (Intern)  
Examiner:  
Bey, Niki (Intern)  
Bruun, Sander (Ekstern)  
Sonesson, Ulf (Ekstern)

**Financing sources**

Source: Internal funding (public)  
Name of research programme: Samfinansieret - Andet  
Project: PhD

**Liner shipping network design based on local optimization**

Department of Management Engineering  
Period: 01/09/2014 → 16/04/2018  
Number of participants: 6  
PhD Student:  
Koza, David Franz (Intern)  
Supervisor:  
Pisinger, David (Intern)  
Main Supervisor:  
Røpke, Stefan (Intern)
MRV of transformational change through NAMAs
To improve the understanding of transformational change (TC) and how to Monitor, Report and Verify (MRV) Nationally Appropriate Mitigation Actions (NAMAs) that may facilitate TC for low emission and sustainable development to achieve the 2°C target.

Department of Management Engineering
UNEP Rise Centre
Period: 25/08/2014 → 30/11/2014
Number of participants: 5
Project ID: 82249
Project participant:
Olsen, Karen Holm (Intern)
Fenhann, Jørgen Villy (Intern)
Bakhtiari, Fatemeh (Intern)
Boodoo, Zyaad (Intern)
Hinostroza, Miriam L. (Intern)

Relations
Publications:
Transformational Change for Low Carbon and Sustainable Development

Green corridors in freight logistics
Department of Management Engineering
Number of participants: 6
PhD Student:
Panagakos, George (Intern)
Supervisor:
Larsen, Allan (Intern)
Main Supervisor:
Psaraftis, Harilaos N. (Intern)
Examiner:
Rich, Jeppe (Intern)
Cullinane, Kevin (Ekstern)
Ojala, Lauri (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD
Social Acceptance as a Limiting Factor in the Expansion of Wind Energy in Denmark

Department of Management Engineering
Period: 15/08/2014 → 01/05/2018
Number of participants: 5
Phd Student:
Bout, Celine (Intern)
Supervisor:
Ellis, Geraint (Ekstern)
Gregg, Jay Sterling (Intern)
Haselip, James Arthur (Intern)
Main Supervisor:
Borch, Kristian (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Controversies on wind power Wind2050

Energy Systems Analysis
Department of Wind Energy
Department of Management Engineering
Technology and Innovation Management
Systems Analysis
Energy Systems Analysis
Aalborg University
University of Copenhagen
Danish Institute for Governmental Research
CONCITO
Queen's University Belfast
Period: 14/08/2014 → 14/08/2017
Number of participants: 3
Acronym: Wind2050
Number of related Ph.D. students: 3
Project participant:
Nyborg, Sophie (Intern)
Klinge Jacobsen, Henrik (Intern)
Project Manager, academic:
Borch, Kristian (Intern)

Relations
Press / Media items:
Vindmølle-forsker: Genialt at Vattenfall køber landejendomme
Forsker: Vindmøllekonflikter skyldes misundelse
Vindmølle-modvind skal vendes til medvind
Ja tak til vindenergi - bare ikke lige her
Project

The multiple benefits of measures to improve energy efficiency

The study provides world and G20 national- and sector-specific estimates of the emissions reduction potential associated with energy efficiency measures. To this end it relies on two world-class energy-economy models, thus quantifying the uncertainty associated with the estimates.

Model outputs are used in an econometric model, to assess the macro-economic impacts of measures aimed at improving energy efficiency. Assessed impacts include GDP growth, employment and trade balances, among others. For each
country, national aggregates and sector specific figures (each with its uncertainty range) are provided.

The project further includes a survey of national policies in key sectors relevant to energy efficiency, such as iron and steel industry or household appliances, among others. For each sector three-to-five national cases are provided, each outlining measures that have proven effective in improving energy efficiency in that sector. These descriptions contain semi-quantitative assessments of the multiple benefits associated with improving energy efficiency (for example, impacts on human health, public budgets or environmental conditions).

Department of Management Engineering

UNEP Rise Centre
Period: 01/08/2014 → 30/04/2015
Number of participants: 1
Energy efficiency, Co-benefits
Project participant:
Puig, Daniel (Intern)

Documents:
UNEP_Report_Version2_low

Economics of wind integration and acceptance costs

Department of Management Engineering
Period: 01/08/2014 → 12/03/2018
Number of participants: 6
Phd Student:
Hevia Koch, Pablo Alejandro (Intern)
Supervisor:
Ladenburg, Jacob (Ekstern)
Main Supervisor:
Klinge Jacobsen, Henrik (Intern)
Examiner:
Møller Andersen, Frits (Intern)
Hoen, Ben (Ekstern)
Olsen, Søren Bøye (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Før og efterundersøgelse af deltagere i forsøgsprojektet: Kollektiv trafik og delebiler – en samlet mobilitetsløsning

Department of Transport
Transport policy and behaviour
Region Hovedstaden
Letsgo
Period: 01/06/2014 → 31/08/2015
Number of participants: 2
Acronym: Delebileveluering
Project participant:
Nielsen, Thomas Alexander Sick (Intern)
Haustein, Sonja (Intern)

Eco-design 2.0 - Quantitative Eco-design within Drives and Automation Technologies

Department of Management Engineering
Period: 01/06/2014 → 25/09/2017
Number of participants: 7
Phd Student:
Auer, Johannes (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Wegener, Dieter (Ekstern)
Main Supervisor:
Bey, Niki (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Herrmann, Constantin (Ekstern)
Herrmann, Christoph (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Privatist

Relations
Publications:
EcoDesign 2.0 - Quantitative EcoDesign within Drives and Automation Technologies
Project: PhD

Methods for knowledge transfer from offshore units operating phase to design, planning and operation optimization
This two-year research project aims to 1) develop and test a methodology to capture and transfer operational knowledge and experiences, and 2) integrate these experiences with the existing knowledge transfer systems within the offshore sector. The research questions driving the project are: 1) How operational experiences and knowledge can be captured in a systematic way and reflecting the actual work practices on board offshore units, and 2) How this captured knowledge can be transformed into valuable information and transferred to onshore staff working with design of new units, equipment and optimization of existing units? There is a big difference, both geographical and workwise, between the offshore operators and the onshore staff. This difference reinforces the need for an experience transfer system that overcomes the existing communication barriers. Knowledge from offshore operations can optimize new projects and existing units in terms of costs, safety and production effectiveness. The project is in collaboration with Maersk Drilling and funded by the Danish Maritime Fund. The main outcome will be a validated toolkit with guidelines that can help offshore companies in improving safety, health and production efficiency on board offshore installations.

Department of Management Engineering
Production and Service Management
Engineering Systems Group
Period: 01/05/2014 → 31/08/2016
Number of participants: 3
Acronym: EDGE
Project participant:
Jensen, Anna Rose Vagn (Intern)
Project Manager, organisational:
Souza da Conceição, Carolina (Intern)
Project Manager, academic:
Broberg, Ole (Intern)

Success in the face of uncertainty: human resilience and the accident risk bow-tie (SAFERA framework project)
The research addresses success rather than failure and the topics of resilience, improving management of safety and whether resilience concepts can be integrated into classical bow-tie approaches. The Dutch institute RIVM has an interest in scenario-based methods using their bow-tie structured accident analysis tool Storybuilder™. The bow-tie is a linear model with a focus on the negative, the already occurred accidents. Resilience modelling is a mirror of this in being proactive rather than reactive in the face of unanticipated scenarios. The research aims to unite the strong points of both sides, focusing on the mental models of people delivering success in handling uncertainty.

A resilience questionnaire, focused on how people mentally model the changing risk environment, will be developed for interviewing people who have to deal with high risk control problems such as mountain climbing, tactical military training, management of major hazard (petro)chemical installations and dangerous maintenance tasks. The result will be information on the mental characteristics of people that manage high risk environments resiliently, providing inspiring case
studies in this regard across sectors, which will help determine what organisations should do to stimulate resilience within their own human capital. Further, the mental modelling work will be incorporated in the publically available Storybuilder™ bow-tie tool. Structural and reliability modelling will be done to see how the bow-tie, a well-known risk management tool, can be improved for incorporating the resilience factor such that qualitative and quantitative bow-tie outputs will encompass the success factor rather than failure. The model will finally be filled with a demonstration set of accident scenarios to show how negative events can be translated into a showcase of positive lessons.

The outcomes will benefit current users of bow-tie modelling by providing lessons learned on resilience which will be offered to sector organisations of participating businesses as well as organised learning opportunities provided through a website, webinars and a workshop.

DTU will contribute to bow-tie modelling, formalisation of the mental modelling within the framework of bow-tie modelling. Furthermore, DTU will contribute with knowledge and experience of how to optimise the use of research in the practical implementation in industry across all the main processes of the project and by writing the Manual and one of the articles. DTU will assist by providing access to DTU tools/knowledge associated with barrier success modelling.

This project is co-ordinated by White Queen BV, Netherlands.

Department of Management Engineering
Production and Service Management

White Queen BV
Anne van Galen Consultancy
National Centre for Scientific Research "Demokritos"
Period: 01/05/2014 → 01/02/2015
Number of participants: 2
Risk, Safety, Resilience, Learning
Acronym: SAFERA
Project participant: Duijm, Nijs Jan (Intern)
Jørgensen, Kirsten (Intern)

Conceptual Modelling for Product Configuration Systems
Department of Management Engineering
Period: 01/05/2014 → 21/09/2017
Number of participants: 6
Phd Student: Shafiee, Sara (Intern)
Supervisor: Mortensen, Niels Henrik (Intern)
Main Supervisor: Hvam, Lars (Intern)
Examiner: Jacobsen, Peter (Intern)
Malis, Martin (Intern)
Vareilles, Élise (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD

Relations
Publications:
Conceptual Modelling for Product Configuration Systems
Project: PhD

Design of Cradle to Cradle®- Inspired System for Beer Beverage Packaging
Carlsberg Foundation’s Individual postdoctoral fellowship

Department of Management Engineering
QUAN-TOX
QUAN-TOX is a four-year project aiming at extending, disseminating, and harmonizing the QUANtification of human and ecosystem TOXicity impacts when assessing the sustainability of products and services over their life cycle. Research will identify and address existing gaps in current toxicity assessment models. Dissemination of research results includes scientific publications and knowledge transfer including teaching activities and elaborating training material. As a result, QUAN-TOX promotes sustainability aspects towards integration into European legislation and strengthens Europe's role in raising scientific awareness of aspects around risk minimization, product optimization, and life cycle thinking, which is in line with the Europe 2020 economy growth strategy. Thereby, QUAN-TOX will play a key role at the interface between researchers in life cycle toxicity assessment and stakeholders including policy makers at the European scale, community organisations, industry, academy, schools and students, and the general public. Finally, QUAN-TOX helps to tackle societal challenges like human health and well-being, sustainable agriculture, and clean energy that all reflect policy priorities according to the Horizon 2020 EU Framework Programme for Research and Innovation.

Methods for employee participation in product innovation
The aim of the two year project is to develop and test methods for planning and executing product innovation by involving employees from the manufacturing process. The development of new products is often confined to the knowledge of engineers and specialist in the R&D department, while ideas and knowledge from the manufacturing process only to a limited extend is applied in product innovation. The methods developed in this project contribute to foster collaboration between manufacturing and product development departments, so ideas and knowledge from manufacturing naturally are included in and strengthen product innovation. Three large and medium sized companies are involved in the project to test the developed methods. A training program is developed and offered to interested companies in the end of the project period to disseminate the methods for wider use in industry.

Danmark cykler sammen
'Danmark cykler sammen' is a three year campaign project aiming to promote cycling in the Danish population. DTU Transport will participate with knowledge support and evaluation of project outcomes.
Dynamic University Timetabling
Department of Management Engineering
Period: 01/02/2014 → 18/05/2017
Number of participants: 9
Phd Student:
Lindahl, Michael (Intern)
Supervisor:
Herold, Michael Bigom (Ekstern)
Ho, Sin C. (Ekstern)
Kristiansen, Simon (Intern)
Sørensen, Matias (Intern)
Main Supervisor:
Stidsen, Thomas Jacob Riis (Intern)
Examiner:
Larsen, Jesper (Intern)
Berghe, Greet Vanden (Ekstern)
Hasle, Geir (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD

Relations
Publications:
Strategic, Tactical and Operational University Timetabling
Project: PhD

Mathematical Programming Approaches for Optimal University Timetabling
Department of Management Engineering
Period: 01/02/2014 → 18/05/2017
Number of participants: 7
Phd Student:
Bagger, Niels-Christian Fink (Intern)
Supervisor:
Sørensen, Matias (Intern)
Sørensen, Michael Malmros (Ekstern)
Main Supervisor:
Consultancy Support for Energy and Greenhouse Gas Analyses for the Danish Energy Agency
Higher energy efficiency and increased deployment and integration of renewable energy are key mitigation strategies for reducing anthropogenic greenhouse gas emissions and thus combating climate change. Developing economies constitute a particular challenge in this regard, often lacking the technological development or the financial resources to invest in a greater share of renewable energy within the context of sustainable development. Within the last decade, industrial greenhouse gas emission from the non-Annex B Kyoto countries surpassed those of the Annex B (Boden et al., 2013). In light of this, developed counties, such as Denmark, have the opportunity to lend their expertise to developing regions of the world in order to promote sustainable development through energy efficiency and renewable energy development. Part of this process involves identification of opportunities for renewable energy expansion and energy efficiency improvements, under the framework of integrated assessment of mitigation instruments. Herein, we describe a model-based approach for integrated assessment that takes into account both developed and developing regions of the world within the global context. Integrated Assessment models were designed to identify the least expensive mitigation options. The linkage between energy, economics, and the environment within the integrated assessment framework provides a tool that leads to better understanding of how to most optimally meet specific energy, environmental, or climate constraints. Included in integrated assessment models are mitigation potentials for each global region and sector, costs, different technology penetration levels and efficiency improvements and their effect on climate mitigation, and comparison of different policy and regulatory instruments.

Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Danish Energy Agency
Period: 06/01/2014 → …
Number of participants: 1
Acronym: EGGA-DEA
Project Manager, organisational:
Herrmann, Ivan Tengbjerg (Intern)
Project

Joint Adaptation Mitigation State of Play
Development of a report reviewing current state of play in joint adaptation and mitigation

Department of Management Engineering
UNEP DTU Partnership
Period: 01/01/2014 → 31/12/2015
Number of participants: 2
Project participant:
Bakkegaard, Riyong Kim (Intern)
Møller, Lea Ravnikilde (Intern)
Project

Green Climate Fund Readiness (Ghana & Benin)
The Green Climate Fund Readiness Programme builds countries' capacity to access the Green Climate Fund, through preparing countries to plan for, manage, disburse and monitor climate financing.
By offering results-oriented support, the Programme helps strengthen national climate finance institutional frameworks, assist in identifying climate change activities with high funding priority for the countries, and facilitate increased investment of the private sector in climate relevant areas.

Department of Management Engineering

UNEP DTU Partnership
Period: 01/01/2014 → 31/12/2017
Number of participants: 2
Acronym: GCF Readiness (Ghana & Benin)
Project participant:
Akom, Emmanuel (Intern)
Hinostroza, Miriam L. (Intern)

Adaptation Mitigation Readiness Project
enhancing the engagement of private sector in climate change projects in developing countries

Department of Management Engineering

UNEP DTU Partnership
Period: 01/01/2014 → 31/12/2016
Number of participants: 2
Acronym: ADMIRE
Project participant:
Bakkegaard, Riyong Kim (Intern)
Project Manager, organisational: Rusnak, Milan (Intern)

Nordic Built Campus Retrofit - CARE
Nordic Built Campus retrofit (CARE) targets to improve cooperation among businesses in the Nordic building sector by testing co-creative and innovative retrofit concepts and processes in Nordic campuses. The showcases with measured evidence of energy- and user-effectiveness are reported in forms of strategic guidelines, tactical use and design manuals and criteria for retrofit business. The outcomes can be applied both in campuses and urban areas in development work and in providing service.

Department of Management Engineering
Production and Service Management
Centre for Facilities Management
Campus Service
Period: 01/01/2014 → 31/12/2015
Number of participants: 2
Acronym: CARE
Project participant:
Nielsen, Susanne Balslev (Intern)
Møller, Jacob Steen (Intern)

ETSAP is the IEA implementing Agreement which is known the MARKAL and TIMES models for optimisation of energy technology choice. The activities include development and use of local, national, regional and global models, data bases and technology descriptions.

Risø National Laboratory for Sustainable Energy
Department of Management Engineering
Systems Analysis
Energy Systems Analysis
Co-Management of Energy and Transport Systems
COMETS contributes to a cost-effective fossil free energy and transport sector by 2050, by understanding the impact on the energy system from 1) the transport sector, 2) consumer preferences and behavior regarding transportation, and 3) planning of cities and transport infrastructure.

Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Roskilde University
University College Cork
Danish Energy Agency
Danish Energy Association
CONCITO
Danish Board of Technology

E4SMA
Period: 01/01/2014 → 01/01/2019
Number of participants: 4
Transport, Energy, TIMES-DK, Renewable energy, Electric vehicles
Acronym: COMETS
Number of related Ph.D. students: 3
Project participant:
Münster, Marie (Intern)
Pizarro Alonso, Amalia Rosa (Intern)
Project Manager, organisational:
Karlsson, Kenneth Bernard (Intern)
Project Manager, academic:
Gregg, Jay Sterling (Intern)

Building Stronger Universities in Developing Countries (BSU). Knowledge Sharing, Research Dissemination And Communication
Department of Management Engineering
UNEP DTU Partnership
Kwame Nkrumah University of Science and Technology
Sokoine University of Agriculture
University of Dar Es Salaam
Period: 01/01/2014 → 30/06/2016
Number of participants: 1
Approving authority:
Wangel, Arne (Intern)

Financing sources
Source: Public research programme (public)
**Green Cohesive Agricultural Resource Management**

The project wants to promote growth and employment through research on green, cohesive Water, Energy-from-Biomass, Soil, Organics, and Crop (WEBSOC) agricultural management strategies in Ghana, as present agricultural development depends on deforestation and show little or no increase in productivity per unit of land. WEBSOC is intended to intensify agriculture to create jobs in poor rural areas. The project will investigate the use of crop residues to produce biochar and wood gas for household-use to lessen the pressure on forests for firewood and charcoal as an intelligent way of recycling organics and reducing CO2 emission. The application of biochar to agricultural fields increases carbon sequestration into the soil and thereby represents a CO2-negative approach to sustainable increase soil fertility, crop yields, and carbon storage. Further intensification will be achieved by small-scale solar drip fertigation systems allowing one to two more growing seasons per year to produce high-value horticultural crops. This is a triple-win situation where farmers get sustained higher yields (from irrigation and improved soil fertility), CC gas emissions are reduced (from increased carbon sequestration), and households get energy (from pyrolysis of straw). Finally, agricultural value chains, both on the supply and processing side, will be developed in cooperation between local SMEs and universities. The research into these options will be pursued within a framework designed to educate PhD students and young scientists.

Supported by the Danida Fellowship Centre.

Department of Management Engineering

Systems Analysis

DTU Climate Centre

Energy Systems Analysis

**Period:** 01/01/2014 → 31/12/2019

**Number of participants:** 1

**Acronym:** WEBSOC

**Project participant:**
Bolwig, Simon (Intern)

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**Center for IT-Intelligent Energy Systems for Cities**

A wide range of research activities have arisen to support the Danish target of a 100% renewable energy system by 2050. Projects focused on individual aspects of the energy system, such as zero emissions buildings or intelligent power systems provide valuable insight, that facilitates flexibility throughout the energy system. CITIES will address this deficiency by establishing an integrated research centre covering all aspects of the energy system, including gas, power, district heating/cooling and biomass, and most importantly methods to forecast, control and optimize their interactions through the use of advanced ICT solutions.

The high densities of population, energy consumption, and energy and communications networks in cities offer the greatest potential for flexibility at the last cost, and the fact that cities account for 80% of global energy consumption and emissions [1] make the urban environment an ideal setting for energy systems integration research. CITIES will pioneer research into fully integrated city energy systems, building short-term operational models that feed longer term planning models, considering the spatiotemporal variations, interactions, dynamics and stochastics in the energy system. Low level models of system components will inform higher-level aggregate models employed in market and control framework design. The leading position of European academia and industry and the rapidly growing market for smart energy solutions indicates substantial scope for increased competitiveness and job creation within this field. CITIES will, in collaboration with its industrial and academic partners, conduct research with a view to developing tools for the implementation of integrated energy system solutions.

Center granted by Strategic Research Council.

To be a sustainable organisation.

Department of Applied Mathematics and Computer Science

Department of Civil Engineering

Department of Management Engineering

Department of Energy Conversion and Storage
Department of Informatics and Mathematical Modeling

Centre for IT-Intelligent Energy Systems in Cities

Aalborg University
Period: 01/01/2014 → 31/12/2019
Number of participants: 8

Strategic
Acronym: CITIES
Number of related Ph.D. students: 12
Project participant:
Madsen, Henrik (Intern)
Heller, Alfred (Intern)
Nielsen, Per Sieverts (Intern)
Pedersen, Allan Schröder (Intern)
Rode, Carsten (Intern)
Pinson, Pierre (Intern)
Jørgensen, John Bagterp (Intern)

Project Manager, organisational:
Herrmann, Ivan Tengbjerg (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Energy Programme
Amount: 44.00 Danish Kroner
Year of approval: 2013

Relations
Activities:
Blockchain Summer School 2017
Climate-KIC PhD Summer School Urban Transition Amsterdam-Bologna 2017
CITIES Annual Conference
3rd International Workshop on Design in Civil and Environmental Engineering
Executive Development Programme with Technical University of Denmark
12th International SDEWES Conference
Energy Supply Modelling in Cities: Illustrated Using Data from the Danish Municipality of Sønderborg
Energy Supply Modelling in Cities: Illustrated Using Data from the Case of Sønderborg
Big Data som værktøj til at styre byens energi
The 40th International IAEE Conference
Big Data as a tool for controlling the cities energy: Data aspects and data management
30th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems
Status and Results of Energy Supply Modelling in CITIES: Illustrated using Data from the Case of Sønderborg
Publications:
Model Identification for Control of Display Units in Supermarket Refrigeration Systems

UNEP Adaptation Gap Report
The Adaptation Gap Report by the United Nations Environment Programme outlines a generic framework for tracking progress towards adaptation objectives and elaborates on the framework (by providing specific definitions and other practical guidance) for three sectors - finance, technology and knowledge.

Department of Management Engineering

UNEP Rise Centre
Period: 01/01/2014 → 31/12/2014
Number of participants: 4
climate change, adaptation goals
Project participant:
Puig, Daniel (Intern)
A. Igual, Emma (Intern)
UNEP Emissions Gap Report 2014
The emissions gap report by the United Nations Environment Programme is an annual scientific assessment of the shortfall between national emission reduction pledges under the United Nations Framework Convention on Climate Change and the levels required to keep global average temperature increases below 2°C, compared to pre-industrial levels.

Department of Management Engineering
UNEP Rise Centre
Period: 01/01/2014 → 31/12/2014
Number of participants: 4
Greenhouse gas emissions, United Nations Framework Convention on Climate Change, Emission reduction pledges
Project participant:
Olhoff, Anne (Intern)
A. Igual, Emma (Intern)
Rasmussen, Mette Annelie (Intern)
Project Coordinator:
Puig, Daniel (Intern)
Documents:
EGR2014_HIGHRES

External Master in Fire Safety courses Fire Risk management, Fire Chemistry & Environmental Chemistry
Department of Management Engineering
Production and Service Management
Risk Research Group
Implementation and Performance Management
Department of Civil Engineering
Period: 01/01/2014 → …
Number of participants: 1
Acronym: MiB
Project participant:
Markert, Frank (Intern)

Technology and Logistics in Health Care
Department of Management Engineering
Period: 01/01/2014 → 30/09/2017
Number of participants: 5
Phd Student:
Feibert, Diana Cordes (Intern)
Main Supervisor:
Jacobsen, Peter (Intern)
Examiner:
Hvam, Lars (Intern)
Hald, Kim Sundtoft (Ekstern)
Åhlström, Pär (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansierede - Virksomhed
Assessment and Traffic Modelling of Bottlenecks and Queues in Road Networks

Department of Transport
Period: 15/12/2013 → 29/02/2016
Number of participants: 3
Phd Student:
Prameswari, Niken (Intern)
Supervisor:
Prato, Carlo Giacomo (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansierede - Virksomhed
Project: PhD

Behavioural Aspects of Households' Investments in Retrofitting

Department of Management Engineering
Period: 15/12/2013 → 16/04/2018
Number of participants: 7
Phd Student:
Petersen, Sebastian Christoph (Intern)
Supervisor:
Bolwig, Simon (Intern)
Henningsen, Geraldine (Intern)
Main Supervisor:
Møller Andersen, Frits (Intern)
Examiner:
Klinge Jacobsen, Henrik (Intern)
Kollmann, Andrea (Ekstern)
Lundgren, Lars Tommy (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Development of a Life Cycle Impact Assessment methodology for Brazil

Department of Management Engineering
Period: 15/12/2013 → 14/12/2017
Number of participants: 6
Phd Student:
Crespo Mendes, Natalia (Intern)
Supervisor:
Laurent, Alexis (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Bruun, Sander (Ekstern)
Ugaya, Cassia Marie Lie (Ekstern)

Financing sources
Development of a Sustainability Assessment method for robotic manufacturing systems

Department of Management Engineering
Period: 15/12/2013 → 07/12/2017
Number of participants: 6
Phd Student:
Rödger, Jan-Markus (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Bey, Niki (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Dettmer, Tina (Ekstern)
Dewulf, Wim (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Science Without Borders, Brasi
Project: PhD

PhD scholarship in Statistical Analysis of High Impact Climate Projections and their Economic Consequences

Department of Management Engineering
Period: 15/12/2013 → 04/11/2018
Number of participants: 2
Phd Student:
von Bülow, Catharina Wolff (Intern)
Main Supervisor:
Halsnæs, Kirsten (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Anden EU-finansiering
Project: PhD

Quantifying the Sustainability of Consumer Products: Focusing on Chemical Exposures

Department of Management Engineering
Period: 15/12/2013 → 23/03/2017
Number of participants: 9
Phd Student:
Ernstoff, Alexi (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Jolliet, Olivier (Ekstern)
Rosenbaum, Ralph K. (Intern)
Trier, Xenia (Intern)
Main Supervisor:
Fantke, Peter (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Egeghy, Peter Paul (Ekstern)
Hellweg, Stefanie (Ekstern)

Financing sources
Source: Internal funding (public)
Scenario Optimization Models for Individual Life-cycle Asset Allocation

Department of Management Engineering
Period: 15/12/2013 → 20/04/2017
Number of participants: 6
Phd Student:
Bjerring, Thomas Trier (Intern)
Supervisor:
Weissensteiner, Alex (Intern)
Main Supervisor:
Rasmussenn, Kourosh Marjani (Intern)
Examiner:
Christiansen, Lasse Engbo (Intern)
Hanke, Michael (Ekstern)
Poulsen, Rolf (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Computational tools to support design synthesis for emotional design

Department of Management Engineering
Period: 01/12/2013 → 07/07/2017
Number of participants: 6
Phd Student:
Perez Mata, Marta (Intern)
Supervisor:
Shea, Kristina (Ekstern)
Main Supervisor:
Ahmed-Kristensen, Saeema (Intern)
Examiner:
Andersen, Henning Boje (Intern)
Chau, Hau Hing (Ekstern)
Petiot, Jean-François (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Design methods for supporting the adaption and design of products for emerging markets

Department of Management Engineering
Period: 01/12/2013 → 07/09/2017
Number of participants: 6
Phd Student:
Li, Xuemeng (Intern)
Supervisor:
Daalhuizen, Jaap (Intern)
Main Supervisor:
Li-Ying, Jason (Intern)
Examiner:
Hansen, John Paulin (Intern)
Jensen, Thomas Aakjaer (Intern)
Kandachar, Prabhu (Ekstern)
**Financing sources**
Source: Internal funding (public)
Name of research programme: Eksternt finansieret virksomhed

**Relations**
Publications:
Identifying and Managing Engineering Design Requirements for Emerging Markets
Project: PhD

**Hybrid Life-cycle-assessment-urban-metabolism model as a framework for quantifying the contributions of urban agriculture to the sustainability of urban food system**
Department of Management Engineering
Period: 01/12/2013 → 23/03/2017
Number of participants: 7
Phd Student:
Goldstein, Benjamin Paul (Intern)
Supervisor:
Fernandez, John E. (Ekstern)
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Birkved, Morten (Intern)
Examiner:
Nielsen, Per Sieverts (Intern)
Dalgaard, Tommy (Intern)
Newell, Joshua P. (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)

**Relations**
Publications:
Assessing the edible city: Environmental implications of urban agriculture in the Northeast United States
Project: PhD

**Improving Quality and Productivity in Construction by reusing similarities in Products, Processes and Organizations**
Department of Management Engineering
Period: 01/12/2013 → 23/03/2017
Number of participants: 7
Phd Student:
Bekdik, Baris (Intern)
Supervisor:
Buchmann-Storup, Rolf (Intern)
Pedersen, Lars Fuhr (Ekstern)
Main Supervisor:
Thuesen, Christian (Intern)
Examiner:
Oehmen, Josef (Intern)
Ballard, Glenn (Ekstern)
Simonsen, Rolf Bang (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Industrial PhD

**Relations**
Publications:
Improving Productivity in Building Construction – by Repetitions in Products, Processes, and Organisations
Project: PhD
Innovation and commercialization paths in different technology areas
Department of Management Engineering
Period: 01/12/2013 → 11/11/2017
Number of participants: 4
Phd Student:
Milana, Evita (Intern)
Supervisor:
Lomberg, Carina (Intern)
Murdock, Karen (Intern)
Main Supervisor:
Li-Ying, Jason (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Methods to support creative processes at the early stages of product development
Department of Management Engineering
Period: 01/12/2013 → 30/09/2018
Number of participants: 3
Phd Student:
Cramer-Petersen, Claus L. (Intern)
Supervisor:
Christensen, Bo T. (Ekstern)
Main Supervisor:
Ahmed-Kristensen, Saeema (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Patterns in Patients Behavior when reorganizing Out-of house Care in the Capital Region of Denmark
Department of Management Engineering
Period: 01/12/2013 → 31/01/2015
Number of participants: 3
Phd Student:
Duthiers, Nadia Monique (Intern)
Supervisor:
Lippert, Freddy (Ekstern)
Main Supervisor:
Jacobsen, Peter (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansierede - Virksomhed
Project: PhD

Urban energy transitions and quality of life
Department of Management Engineering
Period: 01/12/2013 → 05/12/2018
Number of participants: 3
Phd Student:
Ben Amer-Allam, Sara (Intern)
Supervisor:
From BACterial Hosts for production of Bioactive phenolics from bERRY fruits to products

In the era of increased environmental and health awareness new ways are being explored how to fully exploit to this day unrivalled natural resources with renewable bio-production. These new production methods will generate a sustainable pipeline of environmentally-friendly methods to enable production of pharma and agrochemical products with bioactive properties from berry fruits.

This project stands out in bringing together the most recent technologies within the framework of systems metabolic engineering to develop the next-generation bacterial cell factories for the production of plant phenolics, and in applying it to phenolic compounds from cultivated, wild and underutilized species of berries - recognized for their antioxidant, health-promoting and functional properties and applied across applications as diverse as aromas, colours, nutraceuticals and medicines.

BacHBERRY (From BACterial Hosts for production of Bioactive phenolics from bERRY fruits to products) sets out over a three year period to develop a portfolio of sustainable methodologies to mine the potential of the untapped biodiversity of the bioactive phenolic compounds in an extensive collection of berry species. Full exploitation of this unrivalled natural resource requires an integrated and comprehensive effort from bioprospecting in berries using SMART high-throughput screens for the valorisation of phenolic bioactivities aligned with their identification using cutting edge analytics and subsequent elucidation of their biosynthetic pathways. This knowledge will facilitate metabolic engineering of suitable bacterial hosts for high-value phenolics production in scalable fermentation bioprocesses, ultimately serving as commercial production platforms.

Novo Nordisk Foundation Center for Biosustainability

Applied Metabolic Engineering

Research Groups

Quantitative Sustainability Assessment

Microbial Evolution and Synthetic Biology

Period: 01/11/2013 → 31/10/2016
Number of participants: 7
High-value plant metabolites, Bioprospecting, Bacterial Cell Factories, Biosustainable chemical production, Phenolics
Acronym: BacHBERRY
Project participant:
Gaspar, Paula (Intern)
Stahlhut, Steen Gustav (Intern)
Ögmundarson, Ólafur (Intern)
Project Manager, organisational:
Rasmussen, Birte Kastrup (Intern)
Lohmann, Ricarda (Intern)
Project Manager, academic:
Dudnik, Alexey (Intern)
Project Coordinator:
Förster, Jochen (Intern)

Financing sources
Source: EU research programme (public)
Name of research programme: EU FP7 KBBE
Web address: http://www.bachberry.eu/

Relations
Activities:
Bacterial hosts for production of bioactive phenolics from berry fruits (BacHBerry): a strawberry in a pill?
Publications:
Highly Active and Specific Tyrosine Ammonia-Lyases from Diverse Origins Enable Enhanced Production of Aromatic Compounds in Bacteria and Saccharomyces cerevisiae
Assembly of a novel biosynthetic pathway for production of the plant flavonoid fisetin in Escherichia coli

European Clusters for Offshore Wind Servicing
ECOWindS' objective is to pave the way for new research and knowledge of how the costs of offshore wind energy can be driven down through better services. The objective is reached by establishing cross-regional cooperation, intensifying the relationship between research, the European offshore wind servicing (OWS) sector and the offshore wind industry. The actions in the project include mapping of regional capabilities, search of RDI projects and building a Joint Action Plan for regional and international co-operation. ECOWindS is funded from the EU FP7.

Department of Management Engineering
Technology and Innovation Management
Department of Wind Energy
Wind Energy Systems
Wind Turbines
Offshoreenergy.dk
Period: 01/11/2013 → 31/10/2015
Number of participants: 5
Offshore wind, Roadmap, Foresight, Offshore wind services
Acronym: ECOWindS
Project participant:
Piirainen, Kalle A. (Intern)
Andersen, Per Dannemand (Intern)
Clausen, Niels-Erik (Intern)
Buhl, Thomas (Intern)
Cronin, Tom (Intern)

Relations
Publications:
The GRIP method for collaborative roadmapping workshops
Towards a Joint Action Plan for Research and Development in the Offshore Wind Service Industry
Cluster strategies for the North Sea the offshore wind service sector. A sectoral innovation system foresight.
ECOWindS Joint Action Plan - Guidelines for Implementation
ECOWindS Joint Action Plan
ECOWindS Evaluation and Adaptation Report
Technological competence mapping in the North Sea region
Smart Specialization and Capabilities for Offshore Wind Services around the North Sea
Offshore wind energy developments
Smart Specialisation: ‘All roads lead to Rome’
Towards a Joint Action Plan for Research and Development in the Offshore Wind Service Industry

Press / Media items:
Simulatorbransjen satsar på vind

Bystruktur og cykisme
Urban structure, regional location and cycling in small cities. Analysis of cycling modeshares based on travelsurvey (TU) data and geospatial datasets.

Department of Transport
Transport policy and behaviour
University of Copenhagen

Naturstyrelsen
Period: 01/11/2013 → 31/01/2014
Number of participants: 1
Project participant:
Nielsen, Thomas Alexander Sick (Intern)

Complexity Management
Department of Management Engineering
Period: 01/11/2013 → 18/05/2017
Number of participants: 6
Phd Student:
Myrodia, Anna (Intern)
Supervisor:
Mortensen, Niels Henrik (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Jacobsen, Peter (Intern)
Malis, Martin (Intern)
Olhager, Jan Erik (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samfinansierede - Virksomhed
Project: PhD

En ny fremtidig bil-afgiftsmodel baseret på tekniske kriterier
Department of Transport
Transport policy and behaviour
Transport Economics
Danish Transport Research Institute
Period: 01/10/2013 → 01/12/2013
Number of participants: 2
Project participant:
Jensen, Thomas Christian (Intern)
Project Manager, academic:
Mulalic, Ismir (Intern)

CITS - Copenhagen ITS
Vision: A Green and Smart City
Objective: Demonstrate urban wifi-localization potentials

Problems:
Traffic congestion and safety
Traffic information flow to user entities and humans
Environmental challenges caused by transportation
Lack of cooperative connection and information systems between: people, vehicles, goods, assets, infrastructure, businesses, and public sector entities
Lack of integrated smart city traffic and transport management systems, including information flows and user-platforms

Potentials:
Ubiquitous data collection in Smart City platform architecture based on a background technological infrastructure
Real-time ITS services and approaches for providing seamless connectivity, interoperability, and secure flow of information across all stakeholders
General Crowd Management - Methods, Technology (Management and flow description of humans, cars, trucks, goods, assets, etc., through smart-id tagging)
Digital infrastructure of a localization system consisting of transmitters and sensors in streetlight platforms
Performance of experimental demonstrations of techniques and systems, consisting of advanced crowd-management systems and next-generation localization technology in Smart City applications
Large-scale demonstrations connected to the street lamp project of Copenhagen and through visualization of use scenarios

National Space Institute
Geodesy
Office for Innovation & Sector Services
Department of Applied Mathematics and Computer Science
Dynamical Systems
Department of Transport

Transport policy and behaviour
Period: 01/10/2013 → 31/05/2014
Number of participants: 5
Acronym: CITS
Project participant:
Starke, Jens (Intern)
Bacher, Peder (Intern)
Nielsen, Thomas Alexander Sick (Intern)
Project Manager, organisational:
Overton Chabre Holm, David (Intern)
Project Manager, academic:
Haeg, Per (Intern)

Development of 2nd Generation Biorefineries Production of Dicarboxylic Acids and Bio-based Polymers Derived Thereof
The existing 2nd generation biorefineries utilize less than 20% of the biomass feedstock for ethanol production, and major side-streams are produced such as pentose and lignin waste streams, that are respectively used for biogas and energy production.
Converting the carbon from these waste streams into added-value products would increase the otherwise low profitability and improve the environmental benefits of the biorefineries. The suggested project BioREFINE-2G aims at developing commercially attractive processes for efficient conversion of pentose-rich side-streams from biorefineries into dicarboxylic acids, which can be used as precursors for bio-based polymers including biodegradable polymers. The project covers the whole value chain, from characterization of side streams from forest and other non-food feedstock, development of novel robust industrial yeast cell factories, fermentation and downstream process development, to polymerization methods development for the production of biodegradable polymers applicable as plastics, coatings or adhesives, scale-up and demonstration and to life cycle and economic viability analyses.

Novo Nordisk Foundation Center for Biosustainability
CAPEC-PROCESS
Period: 01/10/2013 → 30/09/2017
Number of participants: 7
Acronym: BioREFINE-2G
Project participant:
Stovicek, Vratislav (Intern)
Rasmussen, Birte Kastrup (Intern)
Lis, Alicia Viktoria (Intern)
Lohmann, Ricarda (Intern)
Phd Student:
Ögmundarson, Ólafur (Intern)
Project Coordinator:
Förster, Jochen (Intern)
Borodina, Irina (Intern)

Financing sources
Source: EU research programme (public)
Name of research programme: EU FP7 KBBE

Relations
Activities:
Strain Development for Diacid Production
Publications:
BIOREFINE-2G — Result In Brief: Novel biopolymers from biorefinery waste-streams
CRISPR–Cas system enables fast and simple genome editing of industrial Saccharomyces cerevisiae strains
EasyClone 2.0

Lean & Green: Complementary and contradictory aspects within smart industrial automation of factories
Department of Management Engineering
Period: 01/10/2013 → 30/09/2015
Number of participants: 3
Phd Student:
Walachowicz, Frank (Ekstern)
Supervisor:
Wegener, Dieter (Intern)
Main Supervisor:
Olsen, Stig Irving (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Stipendie fra udlandet
Project: PhD

The importance of urban amenities for the location choice of Danish households
Danish Transport Research Institute
Department of Transport
Transport policy and behaviour
PLEAN - A Lean method to assess the psychosocial work environment

Improvements of the psychosocial working environment are commonly initiated in workplaces based on results from employee questionnaires. The results from the questionnaires should address the possible solutions and programs following the pinpointed problems. However, more frequently the members of the workplace cannot draw these kinds of conclusions about actions from the information gathered in questionnaires, but are left with the problem areas and, without the knowledge of the impact of the problems and coherent solutions.

This interventions project aims at developing a work environment assessment tool based on the workflow analysis in Lean. The close connection between the description and analysis of the flow of task and the assessment of the experienced psychosocial work environment suggests improvements closed connected to conducting the core task. In this view, improved psychosocial work environment is closely linked to high performance and the coordination around performing the core task.

The tool is to be developed and tested in 6 hospital wards.

Department of Management Engineering
Production and Service Management
Aalborg University
CRECEA A/S

Automation and Robotics for EUropean Sustainable Manufacturing

Department of Management Engineering
Quantitative Sustainability Assessment
Department of Mechanical Engineering
Manufacturing Engineering

Value Chain Optimisation in Biogas Production
Phd Student:
Jensen, Ida Græsted (Intern)
Supervisor:
Juul, Nina (Intern)
Pisinger, David (Intern)
Main Supervisor:
Münster, Marie (Intern)
Examiner:
Røpke, Stefan (Intern)
Ahlgren, Erik (Intern)
Boomsma (fhv. Kristoffersen), Trine Krogh (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.

**Relations**
Activities:
Modelling of Biogas Supply Chains
Publications:
Value Chain Optimisation of Biogas Production
Project: PhD

**Biogas Value Chain - Microeconomic Incentives and Policy Regulation**
Department of Management Engineering
Period: 01/08/2013 → 01/09/2017
Number of participants: 6
Phd Student:
Nielsen, Lise Skovsgaard (Intern)
Supervisor:
Juul, Nina (Intern)
Main Supervisor:
Klinge Jacobsen, Henrik (Intern)
Examiner:
Bolwig, Simon (Intern)
Jacobsen, Brian H. (Ekstern)
Lundmark, Karl Robert (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

**Nordic Built STED - Sustainable Transformation and Environmental Design**
Department of Civil Engineering
Section for Building Design
Department of Management Engineering
Royal Danish Academy of Fine Arts
Chalmers University of Technology
Norwegian University of Science and Technology
White Arkitekter AB
JJW Arkitekter
Helen & Hard
REseach network for forward looking activities and assessment of research and innovation prospects in the fields of Climate, Resource Efficiency and raw mATErials

The overall objective is to support the development of the European Union’s new research funding program Horizon 2020, with a specific focus on “Challenge 5: Climate Action, Resource Efficiency and Raw Materials”. RECREATE will provide evidence and intelligence concerning the future directions of these research fields. RECREATE will run until mid 2018 and is carried out by a consortium of 15 key stakeholders from European research and industry.

Department of Management Engineering
Technology and Innovation Management

Period: 01/07/2013 → 31/07/2018
Number of participants: 2
Acronym: RECREATE
Project participant:
Borch, Kristian (Intern)
Rasmussen, Lauge Baungaard (Intern)

interactive simulation of work systems and human factors

Department of Management Engineering
Management Science

Period: 15/06/2013 → 19/01/2017
Number of participants: 5
Phd Student:
Andersen, Simone Nyholm (Intern)
Main Supervisor:
Broberg, Ole (Intern)
Examiner:
Maier, Anja (Intern)
Eklund, Jörgen (Ekstern)
Georg, Susse (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Real Time Process Management for Error Correction and Maintenance in Railways

Department of Management Engineering
Management Science

Period: 15/06/2013 → 23/03/2017
Number of participants: 5
Phd Student:
M. Pour, Shahrzad (Intern)
Hybridisation of CSP with other energy sources

Renewable energies are often criticized for not being able to produce supply power to the electrical grid in a manner that is stable, firm and reliable. This difficulty can find a proper and viable solution through hybrid CSP/biomass plants. The market is showing a strong interest in hybrid technologies for power generation. The aim of HYSOL Project is to become the European reference in competition to this and other initiatives ongoing in the CSP/biomass global market. The HYSOL Project focusses on overcoming the CSP technology limitations to increase its contribution in the global electric market, hybridising with biomass energy to achieve 100 % renewable and sustainable energy, and providing a stable and reliable power independently of meteorological circumstances.

Department of Management Engineering

Energy Systems Analysis

Cobra Instalaciones y Servicios S.A

Centro de Investigaciones Energéticas, MedioAmbientales y Tecnolóxicas

Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile

Investigacion Desarrollo e Innovacion Energetica SL

Air Industrie Thermique Espana SL

Universidad Politécnica de Madrid

Stichting Dienst Landbouwkundig Onderzoek

Period: 01/05/2013 → 30/04/2016

Number of participants: 2

Acronym: HYSOL

Project ID: 82188
Robustness in Railway Planning
Department of Management Engineering
Period: 01/05/2013 → 01/09/2016
Number of participants: 5
Phd Student:
Bull, Simon Henry (Intern)
Main Supervisor:
Larsen, Jesper (Intern)
Examiner:
Stidsen, Thomas Jacob Riis (Intern)
Cacchiani, Valentina (Ekstern)
Nielsen, Lars Henrik (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.

Relations
Publications:
Efficiency and Robustness in Railway Operations
Project: PhD

Topics in Financial Engineering
Department of Management Engineering
Period: 01/05/2013 → 28/05/2013
Number of participants: 6
Phd Student:
Madsen, Claus (Intern)
Supervisor:
Poulsen, Rolf (Ekstern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Weissensteiner, Alex (Intern)
Steffensen, Mogens (Ekstern)
Uryasev, Stan (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Privatist
Project: PhD

CopenHydrogen – balancering og lagring I
Department of Management Engineering
Systems Analysis
Energy Systems Analysis
Period: 01/04/2013 → 30/04/2014
Number of participants: 1
Acronym: CopenHydrogen
Project participant:
Nielsen, Lars Henrik (Intern)
**Consumer Acceptance of Intelligent Charging of Electric Vehicles**

Department of Management Engineering

Period: 01/04/2013 → 27/10/2016

Number of participants: 6

PhD Student:

Fetene, Gebeyehu Manie (Intern)

Supervisor:

Prato, Carlo Giacomo (Intern)

Main Supervisor:

Kaplan, Sigal (Intern)

Examiner:

Mulalic, Ismir (Intern)

Börjesson, Maria (Ekstern)

van Ommeren, Jos N. (Ekstern)

**Financing sources**

Source: Internal funding (public)

Name of research programme: Institut stipendie (DTU) Samf.

**Relations**

Publications:

Consumer Behavior towards Scheduling and Pricing of Electric Cars Recharging: Theoretical and Experimental Analysis

Project: PhD

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**Udvikling af kvalitet, samarbejde, aktivitet samt relationel koordination på operationsgangen, Rigshospitalets, Hjertecenter**

Department of Management Engineering

Production and Service Management

Implementation and Performance Management

Period: 01/04/2013 → 31/12/2013

Number of participants: 1

Project participant:

Edwards, Kasper (Intern)

**Relations**

Activities:

PhD faculty opponent at KTH / Royal Institute of Technology, Unit of Ergonomics (External organisation)

STYRK SAMARBEJDET OG FÅ BEDRE RELATIONEL KOORDINERING

RELATIONEL KOORDINERING

Hvilken effekt har driftsmålstyring på trivslen og hvad kan man med fordel måle på?

RELATIONEL KOORDINERING – TEORI OG PRAKYSIS

Lean and servant leadership

Oplæg på RegionMidt Arbejdsmiljøkonference: Medarbejderne fandt løsninger, mens ledelsen skabte rammer for forandring – En anderledes tilgang på Hjertecentret på RH

Succes med forandring – lad medarbejderne formulere problemerne og finde løsningerne

Master Class om effektivitet og værdiskabelse: En bottom-up tilgang til udvikling på Rigshospitalets Hjertecenter

The servant leadership of change - Successful change required leaders to stand back

**Press / Media items:**

SLäPP Taget!

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**Sustainability assessment methodologies for Nationally Appropriate Mitigation Actions (NAMAs) in developing countries**

Department of Management Engineering
Period: 15/03/2013 → 14/06/2017
Number of participants: 6
Phd Student:
Boodoo, Zyaad (Intern)
Supervisor:
Hansen, Ulrich Elmer (Intern)
Main Supervisor:
Olsen, Karen Holm (Intern)
Examiner:
Nygaard, Ivan (Intern)
Loorbach, Derk (Ekstern)
Remmen, Arne (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Optimization of value chains for biogas production in Denmark
DSF
Department of Management Engineering
Systems Analysis
Energy Systems Analysis
Management Science
University of Southern Denmark
University of Copenhagen
Aarhus University
Knowledge Centre for Agriculture
Period: 01/03/2013 → 31/12/2016
Number of participants: 6
Acronym: BioChain
Number of related Ph.D. students: 2
Project participant:
Klinge Jacobsen, Henrik (Intern)
Juul, Nina (Intern)
Münster, Marie (Intern)
Pisinger, David (Intern)
Nielsen, Lise Skovsgaard (Intern)
Jensen, Ida Græsted (Intern)

Relations
Activities:
27th Conference of Operational Research
Modelling of Biogas Supply Chains
Publications:
The impact of CO₂-costs on biogas usage
Optimizing the supply chain of biomass and biogas for a single plant considering mass and energy losses
Optimised biogas production from the co-digestion of sugar beet with pig slurry: Integrating energy, GHG and economic accounting
Economies of scale in biogas production and the significance of flexible regulation
Project

Strengthening Root and Tuber Value Chains in Ghana
Department of Management Engineering
UNEP DTU Partnership
Aalborg Universitet København
Kwame Nkrumah University of Science and Technology
Period: 01/03/2013 → 28/02/2017
Number of participants: 1
Project Coordinator:
Wangel, Arne (Intern)

Financing sources
Source: Public research programme (public)
Name of research programme: DANIDA Pilot Project
Documents:
PROJECT DESCRIPTION Amended- January 2013

Performance indicators frameworks for national sustainable transport planning

Department of Transport
Period: 15/02/2013 → 29/09/2016
Number of participants: 6
PhD Student:
Cornet, Yannick (Intern)
Supervisor:
Leleur, Steen (Intern)
Main Supervisor:
Gudmundsson, Henrik (Intern)
Examiner:
Nielsen, Per Sieverts (Intern)
Macharis, Cathy (Ekstern)
Marsden, Greg (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

TRANSFORUM

Department of Transport
Transport policy and behaviour
Period: 01/02/2013 → 31/01/2015
Number of participants: 2
Project participant:
Gudmundsson, Henrik (Intern)
Sørensen, Claus Hedegaard (Intern)

Adding value to Facilities Management with Information Technology

Department of Management Engineering
Period: 01/02/2013 → 26/05/2016
Number of participants: 7
PhD Student:
Ebbesen, Poul (Intern)
Supervisor:
Jensen, Per Anker (Intern)
Karshøj, Jan (Intern)
Main Supervisor:
Bonke, Sten (Intern)
Examiner:
Ipsen, Christine (Intern)
Andersson, Niclas (Intern)
Pries-Heje, Lene (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Bæredygtig produktion og logistik baseret på Cradle to Cradle princippet
Department of Management Engineering
Period: 01/02/2013 → 04/12/2017
Number of participants: 6
Phd Student:
Larsen, Samuel Brüning (Intern)
Supervisor:
Akkerman, Renzo (Intern)
Main Supervisor:
Jacobsen, Peter (Intern)
Examiner:
Hvam, Lars (Intern)
Bilberg, Arne (Intern)
Olhager, Jan Erik (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Efficient Algorithms for integrated Container Terminal Activities
Department of Transport
Period: 01/02/2013 → 04/07/2016
Number of participants: 7
Phd Student:
Iris, Cagatay (Intern)
Supervisor:
Pacino, Dario (Intern)
Repke, Stefan (Intern)
Main Supervisor:
Larsen, Allan (Intern)
Examiner:
Psaraftis, Harilaos N. (Intern)
Meisel, Frank (Ekstern)
Vis, Iris F. A. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Global Product Development - Measurement of Global Product Development Performance
Department of Management Engineering
Period: 01/02/2013 → 09/12/2016
Number of participants: 6
Phd Student:
Søndergaard, Erik Stefan (Intern)
The Framework of phase-based planning of railway

Department of Management Engineering
Period: 15/01/2013 → 21/09/2017
Number of participants: 8
Phd Student:
Li, Rui (Intern)
Supervisor:
Landex, Alex (Intern)
Main Supervisor:
Larsen, Allan (Intern)
Examiner:
Psaraftis, Harilaos N. (Intern)
Preston, John (Ekstern)
Vicencio, Alfredo Antonio Núñez (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.

Kina Vækst (China Growth): Business Development in Chinese market for SMEs in Region Sjælland
consultation and guiding SMEs in Region Sjælland regarding their business model innovation and product development in China

Department of Management Engineering
Technology and Innovation Management

Vækthuset Sjælland
Period: 02/01/2013 → 30/09/2014
Number of participants: 1
Project participant:
Li-Ying, Jason (Intern)

ConCoord
The project focuses on the important area of city logistics. It investigates an integrated urban freight simulation environment, a unique measurement framework for the environmental footprint of transport and logistics, and the performance measurement of new innovative urban transport and logistics concepts. Specifically dealing with the different and important considerations of new transportation solutions, new mechanisms for execution and control of city logistics, and research on the urban distribution of goods reducing urban freight movements and its impact on residents and the environment.
The fundamental idea is to stop considering each shipment, actor (e.g. shippers, Logistics Service Providers, etc.) and vehicle in isolation, but as components of an integrated logistics system to be optimized. The keywords are CONsolidation and COORDination (CONCOORD) of the urban distribution flows that are currently fragmented. CONCOORD involves key players in the urban transportation field, both from leading European universities and world-class Europe-based companies, who have expertise and experience in city distribution and who have the willingness to explore this issue for the benefit of all those in Europe.

Department of Transport

Transport optimisation and technique
Period: 01/01/2013 → 01/06/2016
Number of participants: 5
Acronym: ConCoord
Project participant:
Larsen, Rune (Intern)
Wen, Min (Intern)
Project Manager, organisational:
Olsen, Allan (Intern)
Project Manager, academic:
Psaraftis, Harilaos N. (Intern)
Project applicant:
Larsen, Allan (Intern)

UNEP Emissions Gap Report 2013
The emissions gap report by the United Nations Environment Programme is an annual scientific assessment of the shortfall between national emission reduction pledges under the United Nations Framework Convention on Climate Change and the levels required to keep global average temperature increases below 2°C, compared to pre-industrial levels.

Department of Management Engineering

UNEP Rise Centre
Risø National Laboratory for Sustainable Energy
Period: 01/01/2013 → 31/12/2013
Number of participants: 4
Project participant:
Olhoff, Anne (Intern)
Spangsberg, Tasia (Intern)
Rasmussen, Mette Annelie (Intern)
Project Coordinator:
Puig, Daniel (Intern)
Documents:
EmissionsGapReport 2013

Dynamic discrete choice models to assess the effect of sustainable mobility interventions
Project: PhD

Department of Transport

Traffic modelling and planning
Period: 01/01/2013 → 31/12/2015
Number of participants: 2
Supervisor:
Cherchi, Elisabetta (Intern)
Main Supervisor:
Meloni, Italo (Ekstern)
Assemblages in patient safety: Bringing Together Matters of Concern Between Design and Multiple Knowledge Practices in Health Care

Department of Management Engineering
Period: 15/12/2012 → 19/01/2017
Number of participants: 5
Phd Student: Balatsas Lekkas, Angelos (Intern)
Main Supervisor: Yoshinaka, Yutaka (Intern)
Examiner: Borch, Kristian (Intern)
Clausen, Christian (Intern)
Zuiderent-Jerak, Teun (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

City Development, Urban Systems and the Impacts of Climate Extremes

Department of Management Engineering
Period: 15/12/2012 → 19/01/2017
Number of participants: 7
Phd Student: Kaspersen, Per Skougaard (Intern)
Supervisor: Ambjerg-Nielsen, Karsten (Intern)
Madsen, Henrik (Intern)
Main Supervisor:
Drews, Martin (Intern)
Examiner:
Münster, Marie (Intern)
Kreibich, Heidi (Ekstern)
Sandholt, Inge (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

Competitive Liner Shipping Network Design

Department of Management Engineering
Period: 15/12/2012 → 07/04/2016
Number of participants: 6
Phd Student: Karsten, Christian Vad (Intern)
Supervisor: Rapke, Stefan (Intern)
Main Supervisor: Pisinger, David (Intern)
Examiner:
Psaraftis, Harilaos N. (Intern)
Christiansen, Marielle (Ekstern)
Toth, Paolo (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Impacts of waterbone nitrogen emissions to hypoxia-driven marine eutrophication: modelling of damage to ecosystems in life cycle impact assessment (LC IA)

Department of Management Engineering
Period: 15/12/2012 → 01/09/2016
Number of participants: 7
PhD Student:
Cosme, Nuno Miguel Dias (Intern)
 Supervisor:
Birkved, Morten (Intern)
Rosenbaum, Ralph K. (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Laurent, Alexis (Intern)
Henderson, Andrew D. (Ekstern)
Verones, Francesca (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Innovative Approaches to Rural Electrification in Africa: Organisational models that can accelerate and scale up access to modern energy services for rural households in Sub-Saharan Africa

Department of Management Engineering
Period: 15/12/2012 → 22/06/2017
Number of participants: 5
PhD Student:
Pedersen, Mathilde Brix (Intern)
Main Supervisor:
Nygaard, Ivan (Intern)
Examiner:
Olsen, Karen Holm (Intern)
Mulugetta, Yacob (Ekstern)
Raven, Rob (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.

Relations
Publications:
Rural electrification through private models: the case of solar-powered mini-grid development in Kenya: Exploring the hybrid nature of private business models and the interplay between new players and existing structures in the Kenyan rural electrification regime

Knowledge Sharing in Development Work: the Role of Social Media

Department of Management Engineering
Period: 15/12/2012 → 28/02/2017
Number of participants: 6
PhD Student:
Sarka, Peter Bo (Intern)
Supervisor:
Maier, Anja (Intern)
Main Supervisor:
Ipsen, Christine (Intern)
Examiner:
Bentzen, Martin Mose (Intern)
Kianto, Aino Kanerva (Ekstern)
Pedersen, Keld (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Performance measurement in Global Product Development
Department of Management Engineering
Period: 15/12/2012 → 29/09/2016
Number of participants: 5
Phd Student:
Taylor, Thomas Paul (Intern)
Main Supervisor:
Ahmed-Kristensen, Saeema (Intern)
Examiner:
Oehmen, Josef (Intern)
Hicks, Ben (Ekstern)
McKay, Alison (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

Potential of Intelligent Electric Vehicles for Commercial Use
Department of Transport
Period: 15/12/2012 → 31/08/2014
Number of participants: 4
Phd Student:
Linde, Esben (Intern)
Supervisor:
Røpke, Stefan (Intern)
Wen, Min (Intern)
Main Supervisor:
Larsen, Allan (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Sharing space in the Knowledge City
Department of Management Engineering
Period: 15/12/2012 → 23/03/2017
Number of participants: 6
Phd Student:
Berg, Rikke Brinke (Intern)
Supervisor:
Meel, Juriaan van (Ekstern)
Main Supervisor:
Nielsen, Susanne Balslev (Intern)
Faria, Lourenco (Intern)
Supervisor:
Alkærsig, Lars (Intern)
Main Supervisor:
Andersen, Maj Munch (Intern)
Examiner:
Andersen, Per Dannemand (Intern)
Jean, Maïder Saint (Ekstern)
Mazzanti, Massimiliano (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.

Litteraturstudie angående sammenhæng mellem social kapital i virksomheder og svind for Det Kriminalpræventive Råd
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Period: 01/12/2012 → 19/02/2013
Number of participants: 2
Project participant:
Edwards, Kasper (Intern)
Lundstrøm, Sanne Lykke (Intern)
Project

OPHRA - Offshore Platform Hydrocarbon Risk Analysis – Feasibility study
The purpose of the project is to demonstrate the feasibility of developing a tool to assess the risk on offshore platforms due to releases of hydrocarbons. This risk is to be understood as the risk to personnel, expressed in terms of Individual Fatality Risk (IR), Potential Loss of Life (PLL), Fatal Accident Rate (FAR, at platform and workplace level), and group risk (distribution of number of simultaneous fatalities).

The tool will be based on simulation of the interaction between concurrent phenomena following loss of containment, specifically:
• The physical processes (outflow, dispersion, ignition, heat radiation, explosion)
• Detection, alarming and emergency shutdown
• Escape and evacuation
• Impact on persons, escalation and impairment of safety functions
The interaction between these event trees depend on the stochastic outcome of times needed from one event to the other, this set of event trees will be referred to as the dynamic event trees. The simulation technique will be based on Discrete
Event Simulation.
The tool will provide an overall framework to describe and simulate the interactions between the above mentioned concurrent chains of events. The final tool is intended to offer a platform for offshore QRA offering flexibility in choosing data and models to describe these single events.

Focus will be on the documentation of the input that users will use to apply the tool, i.e. the data and models to describe the events in the simulation. The QRA process is considered as combining two sets of knowledge:
1) Assumptions – this consists of the majority of the input to the QRA, such as failure data of components, consequence models, expected responses from systems and people, ambient conditions, the interaction between physical lay-out and impacts, and many other simplifications of reality;
2) Probabilistic reasoning – this consists of the logic reasoning that generates all possible combinations of events in the dynamic event trees– according to the assumptions – into final outcomes.

In principle the probabilistic reasoning will include some level of assumption (viz. a limited number of events in the dynamic event trees), but the ideas is that the principle of the probabilistic reasoning can be justified and verified (i.e. it is possible to ensure that a set of input correctly leads to some output) independent of the correctness of the assumptions, so this part can be verified “once and for all”, while the other input, the assumptions, is presented completely and transparently, so that these assumptions can be verified or justified for each study (or consequence models can be verified or validated independently).

The feasibility study will include the following activities:
The probabilistic reasoning: Establishment of event trees
Generic event trees will be developed for the 4 concurrent processes, and links defined between these processes. The event trees will be expressed with “time from release” as the independent variable. The development of the processes will all be expressed with reference to this time.

For demonstration purposes the event tree framework will be implemented in ARENA® Discrete Event Simulation (DES) software. ARENA will allow single simulations to be visualized for verification and testing. The ARENA implementation will be demonstrated to the project partners and its review group. The ARENA implementation is not intended for release to other parties.

Rules for input and documentation
Formal requirements for initial data (information on the platform layout, modules, escape routes, etc.) and the deterministic (for describing physical effects) and stochastic (for describing random events) models contained in the “event boxes” will be established, i.e. dependent parameters and the output of each model will be defined. For example, the model for “jet flame” will depend on release rate, hole size, direction, and deliver as output: flame size, location and radiation contour.

Input can be provided either by on-line models, which, for the sake of creating statistical significant results, need to be very simple, or off-line data, such as results from CFD explosion modeling, which requires some processing and interpolation of results in order to transfer results from few scenarios into the DES model.

An important consideration will be to develop criteria or a format for documentation of the assumptions with respect to completeness, transparency and traceability.

For the feasibility study, very simple models for the events will be selected, mainly based on the “Yellow Book” or other similar, relevant sources. Only models necessary to create sufficient credibility of the feasibility study will be included, which e.g. means that the easiest type of release (single phase gas release) will be included.

DTU will deliver to the project partners by the end of the feasibility study:
• A proposal for transparent and complete documentation of QRA assumptions (input), to be delivered by means of a technical report describing structure, and exemplification using the demo case study;
• A description of a framework for a QRA technique based on concurrent (dynamic) event trees, evaluated using Discrete Event Simulation, to be delivered by mean of a technical report;
• A demonstration of that framework with a simple set of models and data, to be delivered as a workshop demonstration and output by means of screen dumps with explanatory text.
Quantifying the uncertainty of GDP and oil price projections in Mexico using structured expert judgement
The so-called Cooke method for expert judgement elicitation is used to obtain probability distributions for two key drivers of greenhouse gas emissions in Mexico - GDP and oil prices

Department of Management Engineering
UNEP Risø Centre
Risø National Laboratory for Sustainable Energy
Period: 01/12/2012 → 31/08/2014
Number of participants: 1
Project Coordinator:
Puig, Daniel (Intern)
Documents:
AFD_non-technical
Project

Transformation Agenda for Low Carbon Cities
FP7 project in collaboration with seven European cities.
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Period: 01/12/2012 → 31/05/2015
Number of participants: 1
Acronym: Transform
Project participant:
Solér, Ola (Intern)
Project

Optimization of Rail Operations with regard to Passenger Benefit
Department of Transport
Period: 01/12/2012 → 25/02/2016
Number of participants: 6
Phd Student:
Jensen, Jens Parbo (Intern)
Supervisor:
Prato, Carlo Giacomo (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Røpke, Stefan (Intern)
Bierlaire, Michel (Ekstern)
Kroon, Leo (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Policy analysis of energy demand flexibility
Department of Management Engineering
Period: 01/12/2012 → 16/02/2017
Number of participants: 6
Phd Student:
Katz, Jonas (Intern)
Supervisor:
Jensen, Stine Grenaa (Intern)
Main Supervisor:
Morthorst, Poul Erik (Intern)
Examiner:
Pade, Lise-Lotte (Intern)
Bolkesjø, Torjus Folsland (Ekstern)
Østergaard, Poul Alberg (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Smart grid development and households in experimental projects
Department of Management Engineering
Period: 01/12/2012 → 26/05/2016
Number of participants: 5
PhD Student:
Hansen, Meiken (Intern)
Main Supervisor:
Borup, Mads (Intern)
Examiner:
Yoshinaka, Yutaka (Intern)
Christensen, Toke Haunstrup (Intern)
Heiskanen, Eva-Karin (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering

Relations
Publications:
Smart grid development and households in experimental projects
Project: PhD

NAMA Partnership Working Group on Sustainable Development
The international partnership on NAMAs has been created with the objective to enhance collaboration and complementarity of the activities of multilateral, bilateral and other organizations to accelerate support to developing countries in preparation and implementation of their NAMAs. The partnership aims to identify best practices and share knowledge to facilitate the preparation and implementation of NAMAs in developing countries, among others.

In support of NAMAs in the context of national sustainable development, a number of activities are proposed under each of the three focus areas identified by the Partnership:

1) Contribution of NAMAs in meeting defined national mitigation goals and targets:
Develop methodologies (e.g. Excel sheets) for calculating how NAMAs contribute to national mitigation goals and targets and at what cost. Train government officials how to use the methodologies, on demand.

2) Contribution of NAMAs to sustainable development and other national development goals:
Develop an assessment tool to highlight the SD co-benefits and risks of negative impacts of NAMAs. Train government officials and relevant stakeholders how to use the tool, on demand.

3) Institutional arrangements for NAMAs:
Develop generic models for institutional frameworks to approve and implement NAMAs. Explore best practice case studies on governance of NAMAs. Organize global/regional platforms to share knowledge and experiences with institutional models for NAMAs.

There is no agreed date to finalize the NAMA Partnership. On the contrary the idea is to keep it active as long as needed.

Department of Management Engineering
UNEP Rise Centre
Period: 18/11/2012 → 31/01/2016
Number of participants: 4
Project ID: 82126
Project participant:
Olsen, Karen Holm (Intern)
Hinostroza, Miriam L. (Intern)
Christensen, John M. (Intern)
Sharma, Sudhir (Intern)

Project

Geographical representations of renewable energy Systems
Department of Management Engineering
Period: 01/11/2012 → 19/01/2017
Number of participants: 6
Phd Student:
Petrovic, Stefan (Intern)
Supervisor:
Møller, Bernd (Ekstern)
Main Supervisor:
Karlsson, Kenneth Bernard (Intern)
Examiner:
Henningsen, Geraldine (Intern)
Balstrøm, Thomas (Ekstern)
Bolkjesje, Torjus Folsland (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

Tools for global innovation and product development
A four year project to develop tools to support: performance measurements in global product development and support decision making, and model for joint innovation.

Department of Management Engineering
Technology and Innovation Management
Production and Service Management
Period: 01/10/2012 → 30/04/2017
Number of participants: 5
Product development, Performance indicators, Decision making, Joint Innovation
Number of related Ph.D. students: 2
Project participant:
Jensen, Ole Kjeldal (Intern)
Cash, Philip (Intern)
Maier, Anja (Intern)
Phd Student:
Taylor, Thomas Paul (Intern)
Project Manager, academic:
Ahmed-Kristensen, Saeema (Intern)

Financing sources
Source: Public research programme (public)
Name of research programme: Industriens fond
Amount: 6,000,000.00 Danish Kroner
Year of approval: 2012

Relations
Related projects:
Global Product Development
Activities:
Global Product Development Industry Workshop
Project

**Network Effects within Railway Networks**
Department of Transport
Period: 01/10/2012 → 07/04/2016
Number of participants: 6
Phd Student:
Jensen, Lars Wittrup (Intern)
Supervisor:
Landex, Alex (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Larsen, Allan (Intern)
Goverde, Rob M. P. (Ekstern)
Preston, John (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

**Novice drivers' hazard detection and crash avoidance maneuvers**
Department of Management Engineering
Period: 01/10/2012 → 14/03/2018
Number of participants: 5
Phd Student:
Abele, Liva (Intern)
Supervisor:
Haustein, Sonja (Intern)
Examiner:
Barfod, Michael Bruhn (Intern)
Agerholm, Niels (Ekstern)
Várhelyi, András (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

**How can Copenhagen University increase their social capital?**
Department of Management Engineering
Production and Service Management
University of Copenhagen
Aalborg University
Period: 03/09/2012 → 20/06/2014
Number of participants: 1
Project participant:
Ipsen, Christine (Intern)

Financing sources
Source: Other public support (public)
Name of research programme: SCK finansieret projekt
Dynamic Route Choice Models: Representing congestion and queue spillbacks

Department of Transport
Period: 01/09/2012 → 30/04/2014
Number of participants: 3
Phd Student:
Raovic, Nevena (Intern)
Supervisor:
Prato, Carlo Giacomo (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Integrated Optimisation of Vehicle Resources in Urban Rail Transport Systems

Department of Management Engineering
Period: 01/08/2012 → 23/03/2017
Number of participants: 6
Phd Student:
Thorlacius, Per (Intern)
Supervisor:
Groth, Julie Jespersen (Intern)
Main Supervisor:
Larsen, Jesper (Intern)
Examiner:
Røpke, Stefan (Intern)
Krasemann, Johanna Törnquist (Ekstern)
Mannino, Carlo (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Industrial PhD
Project: PhD

Integret disponering/genopretning af togdrift

Department of Management Engineering
Period: 01/08/2012 → 11/12/2015
Number of participants: 6
Phd Student:
Haahr, Jørgen Thurlund (Intern)
Supervisor:
Larsen, Jesper (Intern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Røpke, Stefan (Intern)
Borndörfer, Ralf (Ekstern)
Huisman, Dennis (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
**Prioritising adaptation to climate change in the agriculture sector in Mexico through multi-criteria analysis**

Development of a criteria tree, with its associated weights, criteria and indicators, to prioritise measures to adapt to climate change in the sector of irrigated agriculture in Mexico.

Department of Management Engineering

UNEP Risø Centre

Risø National Laboratory for Sustainable Energy

Period: 01/08/2012 → 31/07/2013

Number of participants: 1

Project Coordinator:

Puig, Daniel (Intern)

**Sustainable Technical and Economic Pathways for Electrified Mobility Systems in EU27 by 2030**

The project is part of ERA-NET Plus Electromobility+

Pure and Plug-in-Hybrid electric vehicles can provide an appropriate technological answer to EU’s energy and environmental strategic goals. They can reduce oil dependency; increase flexibility since many energy carriers can be converted to electricity; increase end-use energy efficiency through the higher efficiency of electric drive train; and significantly reduce transport related greenhouse gases and air pollutants.

But, to avoid a carbon or efficiency leakage from the end-use to the energy supply level, assessments must be performed in an inclusive framework. Building such a framework is complex due to the technological dimension in which the transport system interacts with a highly diverse mobility demand, and with the electric system and energy system more largely.

Introducing a long term prospective dimension and the possible transformation of those interrelated systems increases the complexity of the task. By expanding existing system analysis tools, the EV-STEP project will develop a framework for such an integrated assessment in order to assess the key technical and economic conditions of an increased electrification of European transport systems while covering the spatial heterogeneity of its territory.

The methodology will be implemented by an experienced team of modellers in a common and shared analysis associating a bottom-up energy systems optimization model to a static computable general equilibrium model. The MARKAL/TIMES and IMACLIM-S modelling frameworks will be used. EV-STEP’s ultimate goal is to state integrated policy recommendations, evaluate technical roadmaps such as those proposed by the Green Car Initiative and quantify implications for the interconnected European electric and energy system, while determining impacts on EU27’s economic input-output balance.

Department of Management Engineering

Ecole des Mines de Paris

University of Stuttgart

Société de Mathématiques Appliquées et de Sciences Humaines

Period: 01/06/2012 → 31/05/2014

Number of participants: 2

Electric vehicles, System model, Macroeconomic model

Acronym: EV-STEP

Project participant:

Grohnheit, Poul Erik (Intern)

Møller Andersen, Frits (Intern)

**Europe-China High Value Engineering Networks**

A mari-currie staff exchange program

Department of Management Engineering

Technology and Innovation Management

University of Cambridge
National Transport Planning - sustainability, institutions, tools

A widespread consensus exists internationally and in Denmark about the relevance of pursuing goals for sustainable transport development but only limited research about how national transportation planning can become a pillar in this process. The goal of SUSTAIN is to expand this research and consolidate a framework on three core domains for a National Sustainable Transport Planning (NSTP): 1) sustainability, 2) institutions and 3) tools. Research within these three domains will address the following questions: How can the concept of sustainability be operationalised and transformed into strategic performance measures for national transport planning? How can these types of knowledge about organisational forms and planning processes contribute to the achievement of such sustainability measures? And how can these new types of knowledge be built into new model-based planning tools that can help advance the strategic planning in the desired sustainable direction?

An important feature of SUSTAIN is that it will seek to combine the results of social and technical sciences in planning research with extensive policy relevant knowledge in dialogue with practitioners and international experts. Furthermore, the SUSTAIN research will be underpinned by multi-faceted case research based on both Danish and international cases. Close connection with ongoing Danish planning practice will serve to demonstrate the potential of the formulated NSTP framework, which is expected to have a broad strategic and policy-oriented appeal and impact on promoting future sustainable transport.
Jensen, Anders Vestergaard (Intern)
Barfod, Michael Bruhn (Intern)
Cornet, Yannick (Intern)

Documents:
SUSTAIN description 28092012

Project

**Hvidbog om Stationsbyer**

Department of Transport

Transport policy and behaviour
Period: 01/05/2012 → 31/01/2013
Number of participants: 1
Project participant:
Nielsen, Thomas Alexander Sick (Intern)

Project

**Effekt af køretøjsteknik på sikkerhed - standardiserede målemetoder for køretøjstekniske forbedringer**

Department of Transport

Traffic modelling and planning
Period: 01/05/2012 → 30/11/2012
Number of participants: 4
Project participant:
Bernhoft, Inger Marie (Intern)
Lyckegaard, Allan (Intern)
Hels, Tove (Intern)
Abele, Liva (Intern)

**Relations**

Parent project:
Improving Road Safety : Developing a Basis for Socio-economic Prioritising of Road Safety Measures

Documents:
Effekt_af_k_ret_jsteknik_p_sikkerhed_endelig_11052012.docx

Project

**Management of business processes for global ERP implementations**

Department of Management Engineering

Period: 01/05/2012 → 01/09/2016
Number of participants: 7
Phd Student:
Rahimi, Fatemeh (Intern)
Supervisor:
Haug, Anders (Intern)
Møller, Charles (Ekstern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Jacobsen, Peter (Intern)
Drews, Paul (Ekstern)
Tambo, Torben (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD
Bioenergy and Sustainable Land Use
Department of Management Engineering
Period: 15/04/2012 → 31/01/2015
Number of participants: 2
Phd Student:
Vejlgaard, Liva (Intern)
Main Supervisor:
Bolwig, Simon (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

CIEL alumni database project
Development of conceptual frame and methodological clarification in creating an alumni database for entrepreneurship research in a cooperation between DTU and CBS facilitated by CIEL.

Department of Management Engineering
Technology and Innovation Management
Innovation Systems and Foresight
Copenhagen Business School
Period: 02/04/2012 → 20/06/2013
Number of participants: 3
Number of related Ph.D. students: 0
Project participant:
Andersen, Maj Munch (Intern)
Murdock, Karen (Intern)
Project Manager, academic:
Salomo, Søren (Intern)

Allocation of quantitative safety targets to the railway sector infrastructure
Department of Management Engineering
Period: 01/04/2012 → 31/03/2013
Number of participants: 4
Phd Student:
Khaliq, Abdul (Intern)
Supervisor:
Duijm, Nijs Jan (Intern)
Funch, Leif (Ekstern)
Main Supervisor:
Kozin, Igor (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Development of a Generic Performance Measurement Model in an Emergency Department
Department of Management Engineering
Period: 01/04/2012 → 18/06/2015
Number of participants: 7
Phd Student:
Sørup, Christian Michel (Intern)
Supervisor:
Forberg, Jakob Lundager (Ekstern)
Ravn, Lisbet Isenberg (Ekstern)
Main Supervisor:
Jacobsen, Peter (Intern)
Examiner:
Larsen, Jesper (Intern)
Ceglarek, Dariusz J. (Ekstern)
Laursen, Jens Ole (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 FUU, 1/3 inst 1/3 Andet
Project: PhD

Safety Management in the Offshore Industry
Department of Management Engineering
Period: 01/04/2012 → 31/07/2013
Number of participants: 3
Phd Student:
Kannov, Peter Hwan (Intern)
Supervisor:
Jensen, Per Langaa (Intern)
Main Supervisor:
Jørgensen, Kirsten (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Regional and Global Energy System Modelling with focus on China
Department of Management Engineering
Period: 15/03/2012 → 24/08/2015
Number of participants: 6
Phd Student:
Mischke, Peggy (Intern)
Supervisor:
Yi, Wang (Ekstern)
Main Supervisor:
Karlsson, Kenneth Bernard (Intern)
Examiner:
Jørgensen, Birte Holst (Intern)
Ahigren, Erik (Intern)
Sandholt, Kaare (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

OECD LEED project Developing Local Indicators for Green Growth
Department of Management Engineering
Technology and Innovation Management
OECD
Period: 05/03/2012 → 20/03/2013
Number of participants: 1
Indicators Green growth Green Economy Copenhagen case
Acronym: OECD LEED
**Kvalitet og Arbejdsmiljørigt projektering i bygge- og anlægsbranchen**

Department of Management Engineering
Planning and Management of the Built Environment

NIKAS A/S
COWI A/S
Gottlieb Paludan arkitekter

Period: 01/03/2012 → 01/03/2015
Number of participants: 4
Acronym: KAMP

**Project participant:**
Andersen, Maj Munch (Intern)

**Activities:**
- 8th International Conference on Working on Safety
- Evaluering og metode. Afrapportering af KAMP-SFU

**Relations**
Publications:
- Arbejdsmiljø i idé-, program- og projektfaserne

**Governance Transition towards Low-carbon Societies: The Role of Institutions in Designing Low Carbon Development Strategies**

Department of Management Engineering
Period: 01/03/2012 → 25/09/2017
Number of participants: 5
PhD Student:
Henrysson, Maryna (Intern)
Main Supervisor:
Hinostroza, Miriam L. (Intern)
Examiner:
Nygaaard, Ivan (Intern)
Funder, Mikkel (Ekstern)
Jerneck, Anne (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret

**Relations**
Publications:
- Governing Transformation towards Low-carbon Societies: An ideational perspective from developing countries
- Project: PhD

**Global Green Growth Institute (GGGI) United Arab Emirates (UAE) Country Program - Capacity Building Part III Contract**

GGGI, in partnership with the UAE Ministry of Foreign Affairs, will develop a comprehensive and coherent national Green Growth Plan (GGP) for the UAE over the period of three years (2011-2014). Among the three components of the project – development of a national Green Growth Plan for the UAE, establishment of a national GHG inventory, and capacity building –URC is expected to develop the UAE-tailored capacity building/training programs for policy makers, production.
officials and stakeholders. Capacity building will mainly involve knowledge-sharing and dissemination through policy dialogues, training programs, workshops and various specialized programs. These programs should be designed and implemented in a way that can best assist the local actors. The objective of the overall capacity building programs is to build the UAE's own capacity to conduct and refine green growth analysis as well as to translate it into policy decisions and implementation plans that are well aligned with the country's broader economic, social and environmental interests.

Out of the total project period, this contract is intended for the Phase I (December 2011 - December 2012) activities, where URC is expected to design and organize training programs and policy dialogues as required in the development of the UAE National Strategy for Green Growth and delivery/communication of it with the objectives of:

1) Establishing sectoral programs for policy design and analysis
2) Facilitating the articulation of comprehensive national strategy
3) Organizing sectoral stakeholder workshops February 2012 to December 2012

URC's main focus will be to design and implement capacity building sessions for sectoral stakeholders from Oil & Gas, Water & Electricity, Transport, Building, Industry and Waste sectors, by organizing specialized sectoral capacity building sessions where each of the six sectors participate at least twice in 2012.

The contract expired end of October 2013. An amendment to extend the contract has been underway since then, awaiting that UAE Government and GGGI could decide on dates for the 2nd knowledge sharing workshops. However, as it has not been possible to confirm dates for the 2nd round of workshops it was agreed the contract will be terminated during February/March 2014.

Department of Management Engineering

UNEP Rise Centre

Holmboe Consult

Petrad

UNEP Sustainable Buildings Climate Initiative

Period: 06/02/2012 → 31/10/2013
Number of participants: 6
Project ID: 82161/URC288
Project participant:
Fenhann, Jørgen Villy (Intern)
Mackenzie, Gordon A. (Intern)
Dhar, Subash (Intern)
Goswami, Surabhi (Intern)
Lütken, Søren (Intern)
Project Coordinator:
Olsen, Karen Holm (Intern)
Project

Modular multi-Use deep water offshore platform harnessing and servicing Mediterranean, subtropical and tropical marine and maritime resources. Deliverable 5.6 – the Viability Strategy.

TROPOS is a European collaborative project funded by the European Commission under the 7th Framework Programme for Research and Development, more specifically under the "Ocean of Tomorrow" call OCEAN 2011.1 – Multi-use offshore platforms. The TROPOS Project aims at developing a floating modular multi-use platform system for use in deep waters, with an initial geographic focus on the Mediterranean, Tropical and Sub-Tropical regions, but designed to be flexible enough so as to not be limited in geographic scope.

TROPOS gathers 20 partners from 9 countries (Spain, the United Kingdom, Germany, Portugal, France, Norway, Denmark, Greece and Taiwan), under the coordination of PLOCAN (Spain - http://www.plocan.eu/es/). The Deliverable 5.6 – the Viability Strategy with the purpose to analyze the integration of the different TEAL service modules (Transport, Energy, Aquaculture, and Leisure) in order to identify the synergies and commonalities arising in the whole system. Considering earlier deliverables of the TROPOS project (D5.2 - An assessment of the economic impact on local and regional economies of the large scale development, D5.3 - Technology pricing of multiuse marine platforms, D5.4 - Lifecycle assessment of multiuse marine platforms, D5.5 - Supporting infrastructure, supply chains and logistics for the deployment of multiuse marine platforms, D6.1 - Report describing a framework for the environmental and socioeconomic study and D6.2 - Report on environmental impact assessment and mitigation strategies), the viability of the three ICS concepts, Leisure Island, Green and Blue and Sustainable Service Hub, is assessed based on hard infrastructure such as ports and vessels, soft infrastructure such as legislation and personnel and training, the private economic viability, the macroeconomic impacts and environmental effects. The analysis have resulted in a list of recommendations to ensure the viability of the three TROPOS ICS concepts with respect to hard infrastructure and soft infrastructure including environmental aspects and finance.
Analytical approaches to integrating agriculture and forestry in low carbon and resilient development strategies

Explaining how process formalization affects new product performance

Projekt Klimaskole: Konceptudvikling af den klimatilpassede folkeskole
Fra begreb til bundlinie - hvordan øger vi den relationelle koordinering?

Department of Management Engineering

Production and Service Management

Period: 03/01/2012 → 31/12/2013
Number of participants: 2
Acronym: RC RegNord
Project ID: 81260
Project participant:
Lundstrøm, Sanne Lykke (Intern)
Project Manager, academic:
Edwards, Kasper (Intern)

Relations
Activities:
STYRK SAMARBEJDET OG FÅ BEDRE RELATIONEL KOORDINERING
RELATIONEL KOORDINERING
Forskning i Relationel Koordinering
KPI'er, performance og adfærd
Lean, arbejdsmiljø, social kapital og relationel koordinering: Erfaringer fra forskningsprojekter
Social kapital og relationel koordinering
Lederkonference 2013
RELATIONEL KOORDINERING – TEORI OG PRAKIS
Ergonomic value-stream mapping and relational coordination
Arbejdsmiljø og lean
Social kapital og relationel koordinering: To væsensforskellige tilgange til trivsel og produktivitet
Forskning i på hospitaler
Relational Koordinering fælles forståelse, fælles sprog, bedre samarbejde

Modular Multi-use Deep Water Offshore Platform Harnessing and Servicing Mediterranean, Subtropical and Tropical Marine and Maritime Resources

Developing a floating modular multi-use platform system for use in deep waters, with an initial geographic focus on the Mediterranean, Tropical and Sub-Tropical regions. Thanks to its different modules, the floating platform system will be able to integrate a wide range of possible sectors: ocean renewable energy and food (aquaculture) resources will be exploited, the platform will serve as a hub for maritime transport and innovations in the leisure sector, and will also fulfill functions for oceanic observation activities.

Department of Management Engineering

Energy Systems Analysis

CONSORCIO PARA EL DISENO, CONSTRUCCION, EQUIPAMIENTO Y EXPLOTACION DE LA PLATAFORMA

OCEANICA DE CANARIAS

University of Edinburgh

Universität Bremen

WAVE ENERGY CENTRE - CENTRO DE ENERGIA DAS ONDAS
Facilitating Implementation and Readiness for Mitigation
The FIRM project supports the preparation of low carbon development strategies and nationally appropriate mitigation actions in nine developing countries. In two of those - Mexico and South Africa - the project provides technical support to quantify the uncertainty associated with national greenhouse gas emissions scenarios.

Department of Management Engineering
UNEP Rise Centre
Rise National Laboratory for Sustainable Energy
Period: 01/01/2012 → 30/11/2015
Number of participants: 1
Acronym: FIRM
Project participant:
Puig, Daniel (Intern)
Documents:
UNEP_GHG_Scenario_hr

Green Corridor in the North Sea Region
GreCOR – Green Corridor in the North Sea Region – is an Interreg IVB North Sea Region project that started the 1st of January 2012. GreCOR will promote the development of a co-modal transport corridor in the North Sea Region. Important in this collaborative approach, is the focus on secondary networks and the hubs, and the regional hinterland around the Green transport corridor Oslo-Randstad from a co-modal perspective.

GreCOR has 14 partners and a total budget of 3.7 M€. It started the 1 January 2012 and will be finalized 31 December 2014. The Swedish Transport Administration is the responsible lead partner for GreCOR

GreCOR works in close collaboration with public and private stakeholders, and its overall aim is to improve knowledge about the logistic needs and conditions and develop and implement the first green corridor in the North Sea Region in a strategic policy setting.

The main idea of the project is to influence the green corridor consisting of infrastructure and transport development in the area. Furthermore, GreCOR aims to:
- Improve knowledge about the logistics needs and conditions in the corridor
- Test innovative logistics solutions through the development of pilot projects
- Promote the development of sustainable transport in the North Sea Region
- Focus on the role of the hubs and the regional hinterland
- Understand and develop the logistics utility creation in a green corridor taking a co-modal perspective.
- One very important tool for reaching the goals of corridor development is a liaison group to which we invite all relevant organizations, stakeholders and companies to join.

Department of Transport

Transport optimisation and technique
Period: 01/01/2012 → 31/12/2014
Number of participants: 4
Acronym: GreCOR
Project participant:
Farina, Federico (Intern)
Larsen, Rune (Intern)

Olsen, Allan (Intern)
Project Manager, academic:
Project applicant:
Larsen, Allan (Intern)

Technological and Market Options for Managing Climate Change Induced Risks for Smallholder Farmers in Northern Ghana
Climate change is likely to affect (and is affecting) the livelihoods of smallholder farmers in many parts of Africa in a negative direction. African smallholders are particularly vulnerable to adverse changes in agro-climatic conditions due to low technological and economic capabilities and an unfavourable institutional and economic environment. This study aims to identify and analyse technological, institutional and policy strategies that can increase the capability of smallholders in northern Ghana to manage climate-change induced risks threatening their livelihoods, thereby reducing vulnerability. This will be achieved through analysing the impacts of climate change on cereal-based farming systems and food markets in northern Ghana. Biophysical and economic models will be developed and used to evaluate the trade-offs and effects of technological and market changes or innovations on farm household resource use, agro-ecosystem sustainability, and household welfare. The results will be used to suggest measures and policies to enhance adaptive capacity and mitigate the negative impacts of climate change.

This project is supported by the Danida Fellowship Centre.

Department of Management Engineering

Systems Analysis

DTU Climate Centre

Energy Systems Analysis
Period: 01/01/2012 → 31/12/2017
Number of participants: 3
Project participant:
Bolwig, Simon (Intern)
Henningsen, Geraldine (Intern)
Gregg, Jay Sterling (Intern)

Biofuel Production from Lignocellulosic Materials
The overall objective of the 2GBIONRG project is to develop sustainable technologies for production of 2nd generation biofuels (biogas, bioethanol and biodiesel) from lignocellulosic waste material in developing countries in Africa. In addition it is also to utilize residuals from the production as fertilizer improving soil fertility and food security. The suggested technologies will make it possible to switch from a society depending more and more on fossil energy to a modern biomass based society. Ghana will be used as a model country. We will develop and adopt sustainable biofuel production systems for three different types of communities: rural villages, cooperatives and large towns.

The project is supported by the Danida Fellowship Centre.
Consequences of large scale bioenergy production in Denmark on biodiversity, forestry, and agriculture in the context of sustainable development
Funded by the Velux Foundation.

Department of Management Engineering
Systems Analysis

Forundersøgelser til strategi for sekundavand i Nordhavnen

Financing sources
Source: Samarb.aftaler - Statslige danske
Name of research programme: Samarb.aftaler - Statslige danske
Amount: 220,000.00 Danish Kroner

Innovativ klimatilpasning med borgerne

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Strategic research centre for 4th Generation district heating technologies and systems

Department of Civil Engineering
Section for Building Physics and Services
Department of Management Engineering
Aalborg University
University of Southern Denmark
Chalmers University of Technology
Halmstad University
Linnaeus University
Tsinghua University
University of Zagreb

Period: 01/01/2012 → 31/12/2017
Number of participants: 4
Fjernvarme
Acronym: 4DH
Project participant:
Svendsen, Svend (Intern)
Karlsson, Kenneth Bernard (Intern)
Münster, Marie (Intern)
Li, Hongwei (Intern)

Financing sources
Source: Public research council
Name of research programme: Det Strategiske Forskningsråd
Amount: 37,000,000.00 Danish Kroner

Absolut miljømæssig bæredygtighed af industrielle aktiviteter

Department of Management Engineering
Period: 15/12/2011 → 24/09/2015
Number of participants: 7
Phd Student:
Bjørn, Anders (Intern)
Supervisor:
Richardson, Katherine (Ekstern)
Røpke, Inge (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Cornell, Sarah Elisabeth (Ekstern)
Goedkoop, Mark (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Offentlig finansiering
Project: PhD

Cross-boundary co-design in the Danish cleantech industry: Networked innovation with design at the centre

Department of Management Engineering
Period: 15/12/2011 → 24/08/2015
Number of participants: 5
Phd Student:
Parraguez Ruiz, Pedro (Intern)
Main Supervisor:
Maier, Anja (Intern)
Examiner:
McAlone, Tim C. (Intern)
Sosa, Manuel (Ekstern)
Steinert, Martin (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.

Life cycle impact assessment of long-term emissions from landfills
Department of Management Engineering
Period: 15/12/2011 → 22/06/2015
Number of participants: 7
Phd Student:
Bakas, Ioannis (Intern)
Supervisor:
Astrup, Thomas Fruegaard (Intern)
Rosenbaum, Ralph K. (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Finnveden, Göran (Ekstern)
Henderson, Andrew D. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Measurement of scheduling preferendes and the value of travel time variability
Department of Transport
Period: 15/12/2011 → 30/11/2015
Number of participants: 6
Phd Student:
Abegaz, Dereje Fentie (Intern)
Supervisor:
Hjorth, Katrine (Intern)
Main Supervisor:
Fosgerau, Mogens (Intern)
Examiner:
Cherchi, Elisabetta (Intern)
Börjesson, Maria (Ekstern)
Rouwendal, Jan (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD
Rejseplanen - Next Generation
Department of Management Engineering
Period: 15/12/2011 → 14/03/2012
Number of participants: 4
Phd Student:
Lins, Thomas Vermehren (Intern)
Supervisor:
Nielsen, Otto Anker (Intern)
Nielsen, Hanne Riis (Intern)
Main Supervisor:
Pisinger, David (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Staging Innovative Processes across Knowledge Practices at the Front End of Innovation
Department of Management Engineering
Period: 15/12/2011 → 31/07/2012
Number of participants: 2
Phd Student:
Brønnum, Louise (Intern)
Main Supervisor:
Clausen, Christian (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Advanced planning approaches for small- and medium-sized enterprises
Department of Management Engineering
Period: 01/12/2011 → 04/07/2016
Number of participants: 8
Phd Student:
Herczeg, Gabor (Intern)
Supervisor:
Akkerman, Renzo (Intern)
Jacobsen, Peter (Intern)
Jensen, Per Langaa (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Hvam, Lars (Intern)
Govindan, Kannan (Ekstern)
Olhager, Jan Erik (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Assessment methods for comfort of consumer products at early stages of the development process
Department of Management Engineering
Period: 01/12/2011 → 22/06/2015
Number of participants: 6
Phd Student:
Stavrakos, Stavros Konstantinos (Intern)
Supervisor:
Goldman, Tomasz J. (Ekstern)
Main Supervisor:
Ahmed-Kristensen, Saeema (Intern)
Examiner:
Andersen, Henning Boje (Intern)
Mansfield, Neil (Ekstern)
Vink, Peter (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

**Danish participation in IEA-ETSAP, Annex XII, 2011-2013**
The project will continue the Danish participation in the IEA Implementing Agreement ETSAP (Energy Technology Systems Analysis Programme), Annexes X and XI under the new Annex XII 'Policy Analysis Tools for Global Sustainability (PAT-SUS): E4 systems tools and joint studies'. The main activities are semi-annual workshops focusing on model analyses, and use of the ETSAP modelling tools and technology data (the MARKAL/TIMES family of models), participation in training sessions on ETSAP tools, and participation in collaborative projects using and improving the ETSAP tools. Contributions to the workshops are based on past, present and future collaborative projects, in particular within the EU research programmes and projects under the Danish Strategic Research Council. Dissemination of results of ETSAP activities will be made through participation in workshops arranged within the Danish modelling community and as Pre-Conference meetings before ETSAP meetings. The project aims at enabling Danish model studies, which are consistent with European and global models. A TIMES model for Denmark was developed within EU research projects as a part of the Pan European TIMES model, which now covers 36 European countries, using harmonised assumptions based on Eurostat data, and with results that are becoming available online (PET36). Another development within ETSAP is the TIMES Integrated Assessment Model (TIAM), which is a global model covering 15 or 16 regions and time horizon year 2100.

Department of Management Engineering
Period: 01/12/2011 → 31/12/2013
Number of participants: 2
ETSAP, MARKAL/TIMES, TIAM
Project ID: 64010-0404 (EUDP)
Project participant:
Grohnheit, Poul Erik (Intern)
Karlsson, Kenneth Bernard (Intern)

**Next generation of life-cycle pension products**
Department of Management Engineering
Period: 01/12/2011 → 23/02/2015
Number of participants: 6
PhD Student:
Bell, Agnieszka Karolina Konicz (Intern)
Supervisor:
Weissensteiner, Alex (Intern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Lusby, Richard Martin (Intern)
Bruhn, Kenneth (Ekstern)
Hanke, Michael (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD
Nordic Energy Technology Perspectives
Nordic Energy Technology Perspectives will present scenario-based technology pathways towards a carbon-neutral Nordic energy and transport system in 2050. It will serve as a common reference document for Nordic decision-makers in energy technology policy and brand the region internationally.

Department of Management Engineering
EA Energianalyse A/S
International Energy Agency
VTT - Technical Research Centre of Finland
Icelandic Meteorological Office
Institute for Energy Technology
SINTEF

Profu

Swedish Environmental Research Institute
Period: 01/12/2011 → 01/12/2012
Number of participants: 2
Acronym: NETP
Project ID: 82132
Project participant:
Münster, Marie (Intern)
Project Manager, organisational:
Karlsson, Kenneth Bernard (Intern)

Financing sources
Source: Forsk. Andre offentlige og private - Nordiske
Name of research programme: Nordic Energy Research
Amount: 440,000.00 Danish Kroner

Skov- og landbrugssektoren i et skiftende klima - Metodeudvikling og analyse af vekselvirkninger mellem tilpasning til klimaændringer og reduktion af drivhusgasser

Department of Management Engineering
Period: 01/12/2011 → 23/03/2017
Number of participants: 6
Phd Student:
Møller, Lea Ravnkilde (Intern)
Supervisor:
Jacobsen, Jette Bredahl (Ekstern)
Main Supervisor:
Olhoff, Anne (Intern)
Examiner:
Halsnæs, Kirsten (Intern)
Markandya, Anil (Ekstern)
Schou, Jesper S. (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret

Relations
Publications:
Climate Change Adaptation and Mitigation in Ecosystems - Benefits, Barriers and Decision-Making
Project: PhD
Technology Opportunities in Nordic Energy System Transitions

To meet 2050 energy and climate policy goals, a major transition is required in the Nordic region. Indeed, changing energy and transport systems may require fundamental social changes. Industrial actors and policy makers will need insights and analyses to help guide their decision-making throughout this process; and, these analyses will have to take account of concerns of environmental sustainability and economic competitiveness.

The TOP-NEST project has developed an approach that addresses this challenge, by clarifying the current situation, and identifying the most promising pathways for towards more sustainable systems.

Department of Management Engineering

Systems Analysis

DTU Climate Centre

Energy Systems Analysis

Period: 01/12/2011 → …
Number of participants: 1
Acronym: TOP-NEST
Project participant:
Solér, Ola (Intern)

Relations
Publications:
Technology Opportunities in Nordic Energy System Transitions (TOP-NEST)

The Governance and Design of Collaborative User-driven Innovation Platforms - Interdependence and managerial implications

Department of Management Engineering

Period: 01/12/2011 → 31/07/2012
Number of participants: 3
Phd Student:
Ástvaldsdóttir, Agnes (Intern)
Supervisor:
Li-Ying, Jason (Intern)
Main Supervisor:
Salomo, Søren (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

TOX-TRAIN

TOX-TRAIN is a 4-year project and its main objective is the development and implementation of a tool box to assess toxicological impacts related to the life-cycle of technologies. The USEtox model, developed under UNEP-SETAC auspices with contributions of the partners in this consortium, will be taken as a starting point. First, TOX-TRAIN will develop and implement estimation tools for emissions and chemical properties to USEtox for a number of compound groups, including ionic and amphiphilic substances, persistent bioaccumulating chemicals or metabolites, pesticides and biocides, substituted musks/fragrances, and metals, with a specific focus on assessing various types of uncertainty in emissions and properties. The compound groups are selected on the basis of use volumes, fate pattern complexity and main emission route relevance. The tools will be developed as open-source software. Second, the USEtox model will be extended with an indoor compartment model for typical exposure situations in working place and household settings as well as direct consumer exposure through a product (e.g. a directly applied cosmetic product). Third, a number of case studies will be performed in close collaboration between the commercial and non-commercial partners of TOX-TRAIN to test the USEtox tool box in practice. Finally, dissemination of the tool box will be done by a portfolio of actions, such as workshops, course developments, training of specific user groups, documentation material, and a user-friendly web-based implementation. In short, TOX-TRAIN will provide an excellent platform to enhance the transfer of knowledge between the commercial and non-commercial sector in the area of toxic life-cycle impact assessment of technologies. It is envisaged that the developed USEtox tool box has a great market potential as it can be directly used in the daily practice of life cycle assessment studies.

Department of Management Engineering
Quantitative Sustainability Assessment

Quantis
Radboud University Nijmegen
Veolia Environnement
Period: 01/11/2011 → 31/10/2015
Number of participants: 3
Modelling (Environmental risks), Life Cycle Impact Assessment, Chemical emission-fate-exposure-effects modelling, Intake Fraction, Indoor emissions/exposure, USEtox model, Consumer/Worker exposure
Project participant:
Birkved, Morten (Intern)
Ernstoff, Alexi (Intern)
Project Coordinator:
Fantke, Peter (Intern)

Relations
Activities:
Towards consensus about the delimitation between life cycle inventory and impact assessment in LCAs with pesticide and fertilizer use
Project

Measuring corporate sustainability: models, methods and findings
In recent decades there has been increasing attention to the social and environmental impacts of business. Stakeholders are ever more concerned and responsible about environmental and social issues and prefer to deal with companies that act sustainably. Accordingly, companies are called to continuously communicate with stakeholders about their corporate social responsibility (CSR), in order to improve stakeholder perceptions and meet their expectations. In this dissertation, I focus on the measurement of corporate sustainability, providing new methods for assessing, monitoring and improving corporate sustainability performance. These methods are mainly based on CSR reporting and stakeholder CSR perceptions and expectations.
This dissertation contains four articles, three of which propose and apply new models and methods for measuring corporate sustainability performance. In particular, one provides a two-dimensional CSR model for measuring the development of CSR programs and the CSR commitment disclosed by the company. The other two articles provide a method to compare company disclosed CSR commitment with stakeholder CSR perceptions and expectations, and a model to classify customers according to these comparisons. The last article of this dissertation explores the impact of individual characteristics (gender, education and age) on CSR perceptions and expectations.
Department of Management Engineering
Technology and Innovation Management
Period: 01/11/2011 → 26/02/2015
Number of participants: 3
Project participant:
Rosati, Francesco (Intern)
Costa, Roberta (Ekstern)
Calabrese, Armando (Ekstern)

Relations
Publications:
Turning Corporate Social Responsibility-driven Opportunities in Competitive Advantages: a Two-dimensional Model
A Managerial Tool for Environmental Sustainability
Does Corporate Social Responsibility Hit the Mark? A Stakeholder Oriented Methodology for CSR Assessment
A fuzzy approach to improve CSR reporting: an application to the Global Reporting Initiative indicators
The Strategic Impact of CSR Consumer-Company Alignment
Project

Engineering studies with emphasis on design competences in engineering practice and education
Department of Management Engineering
Period: 15/10/2011 → 31/07/2012
Number of participants: 2
Phd Student:
Petersen, Rikke Premer (Intern)
Main Supervisor:
Jørgensen, Ulrik (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Brugerperspektiver på varmepumper i smart grid udvikling
Department of Management Engineering
Period: 01/10/2011 → 31/07/2012
Number of participants: 2
Phd Student:
Larsen, Lars Ege (Intern)
Main Supervisor:
Røpke, Inge (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Eco-innovation dynamics in the energy area - new perspectives in innovation studies
Department of Management Engineering
Period: 01/10/2011 → 19/03/2015
Number of participants: 5
Phd Student:
Franceschini, Simone (Intern)
Main Supervisor:
Borup, Mads (Intern)
Examiner:
Borch, Kristian (Intern)
Jacobsson, Bengt Staffan (Ekstern)
Marletto, Gerardo (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Innovation from energy efficiency efforts
Department of Management Engineering
Period: 01/10/2011 → 24/08/2015
Number of participants: 5
Phd Student:
Ruby, Tobias Møller (Intern)
Main Supervisor:
Borup, Mads (Intern)
Examiner:
Bolwig, Simon (Intern)
Bach, Peter Oddershede (Ekstern)
Truffer, Bernhard (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD
**Requirements management with multiple product platforms**

Department of Management Engineering  
Period: 01/10/2011 → 21/05/2015  
Number of participants: 6  
Phd Student: Bonev, Martin (Intern)  
Supervisor: Mortensen, Niels Henrik (Intern)  
Main Supervisor: Hvam, Lars (Intern)  
Examiner: Thuesen, Christian (Intern)  
Elgh, Fredrik (Ekstern)  
Jensen, Lars Jepsen (Ekstern)

**Financing sources**
Source: Internal funding (public)  
Name of research programme: Institut, samfinansiering  
Project: PhD

**Sustainable Management of Water Treatment Technologies**

Department of Management Engineering  
Period: 01/10/2011 → 25/11/2016  
Number of participants: 6  
Phd Student: Bonou, Alexandra (Intern)  
Supervisor: Hauschild, Michael Zwicky (Intern)  
Main Supervisor: Olsen, Stig Irving (Intern)  
Examiner: Bey, Niki (Intern)  
Boks, Casper (Ekstern)  
Finkbeiner, Matthias (Ekstern)

**Financing sources**
Source: Internal funding (public)  
Name of research programme: ErhvervsPhD-ordningen VTU  
Project: PhD

**Road safety in the ageing societies - CONcerns and SOLutions**

During the years following the Commission’s first White Paper on a common transport policy, personal mobility has increased and is now seen as an acquired right. It is an ethical and economic necessity that future transport policies be designed to be inclusive, so that all segments of the ageing European populations can be safely mobile and lead autonomous lives as long as possible. CONSOL aims at advancing knowledge by combining current knowledge on mobility and safety with newest evidence from basic research, e.g., gender studies, social gerontology and findings on health and functionality with age, while also covering some less well-known elderly safety issues such as single-pedestrian and non-crash public transport accidents. Best practices will be discussed and recommendations given in a feasibility perspective, analysing the roles of the different societal actors in making things happen.

Traffic Safety  
Department of Transport  
Transport policy and behaviour  
Number of participants: 3  
Road safety, older road users  
Acronym: CONSOL  
Project ID: 35293
Contact person:
Bernhoft, Inger Marie (Intern)
Project participant:
Siren, Anu Kristiina (Intern)
Haustein, Sonja (Intern)

Financing sources
Source: Forsk. EU - Andre EU-midler
Name of research programme: Forsk. EU - Andre EU-midler
Project

Model til forebyggende virksomhedsstrategier i SMV'er (FV-Modellen)
Department of Management Engineering
Production and Service Management
Innovation and Sustainability
Work, Technology and Organisation
Aalborg University
Period: 01/09/2011 → 30/09/2013
Number of participants: 4
Acronym: FV-Modellen
Project participant:
Ipsen, Christine (Intern)
Gish, Liv (Intern)
Poulsen, Signe (Intern)
Jensen, Ivalo (Intern)

Financing sources
Source: Other public support (public)
Name of research programme: Arbejdsmiljøforskningsfonden
Amount: 2,100,000.00 Danish Kroner
Year of approval: 2011
Project

Udviklingen i virksomhedernes arbejdsmiljøarbejde
Department of Management Engineering
Production and Service Management
Aalborg University
Roskilde University
Aarhus University
Team Arbejdsliv
Period: 01/09/2011 → 01/01/2016
Number of participants: 3
Acronym: AMO
Project participant:
Seim, Rikke (Intern)
Poulsen, Signe (Intern)
Jensen, Per Langaa (Intern)

Model til forebyggende virksomhedsstrategier i SMV'er (FV-Modellen)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Management Science

Aalborg University

Period: 01/09/2011 → 30/09/2013
Number of participants: 5
Acronym: FV-Modellen
Project participant:
Ipsen, Christine (Intern)
Gish, Liv (Intern)
Poulsen, Signe (Intern)
Jensen, Ivalo (Intern)
Sarka, Peter Bo (Intern)

Financing sources
Source: Other public support (public)
Name of research programme: Arbejdsmiljøforskningsfonden
Amount: 2,100,000.00 Danish Kroner
Year of approval: 2011

Real options analysis of energy technologies: Operation and investment

Department of Management Engineering

Period: 01/09/2011 → 31/12/2012
Number of participants: 3
Phd Student:
Drud, Michael Stolbjerg Leni (Intern)
Supervisor:
Fleten, Stein-Erik (Ekstern)
Main Supervisor:
Boomsma (fhv. Kristoffersen), Trine Krogh (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Supporting task for developing of WEB ORCA

Department of Management Engineering

National Institute of Public Health and the Environment

Period: 01/09/2011 → 31/12/2011
Number of participants: 1
Project Manager, organisational:
Jørgensen, Kirsten (Intern)

ArbejdsmiljøVenlig ProjektLedelse (AVPL)

Department of Management Engineering

Period: 10/08/2011 → 10/08/2012
Number of participants: 1
Project participant:
Grex, Sara (Intern)

Arbejdsulykker og forebyggelse inden for Social- og sundhedssektoren : Udført for BAR sosu

Department of Management Engineering
Technology Opportunities in Nordic energy System Transitions
If Nordic energy and transport systems are to meet the 2050 energy and climate policy goals, a major transition is necessary. Fulfilling these goals may require fundamental social changes, perhaps reminiscent of an industrial revolution. Therefore industry and policymakers need insights and analyses that will help guide decision-making, avoid detrimental consequences and develop viable system transition strategies. This project explores how three renewable energy technology platforms: 1) electricity systems, 2) liquid and gaseous biofuels, and 3) hydrogen systems, may give rise to new value chains, creating entrepreneurial opportunities.

Department of Management Engineering
Systems Analysis
Energy Systems Analysis
DTU Climate Centre
NIFU Nordic Institute for Studies in Innovation, Research and Education
Lund University
VTT - Technical Research Centre of Finland

Project Center for forskning i arbejdsmiljøindsatser og virkemidler
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Aalborg University
Roskilde University
Aarhus University
Team Arbejdsliv

Center for forskning i arbejdsmiljøindsatser og virkemidler
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Aalborg University
Roskilde University
Aarhus University
Team Arbejdsliv

Period: 01/08/2011 → 01/10/2011
Number of participants: 1
Project Manager, organisational: Jørgensen, Kirsten (Intern)

Period: 01/08/2011 → 30/09/2016
Number of participants: 6
Project Manager, organisational: Bolwig, Simon (Intern)

Period: 01/07/2011 → 30/06/2016
Number of participants: 1
Acronym: CAVI
Number of related Ph.D. students: 3
Project participant:
Development Process of "best-in-class" high-speed railway line Copenhagen-Ringsted
Department of Transport
Period: 01/07/2011 → 30/06/2014
Number of participants: 4
PhD Student:
Trabo, Inara (Intern)
Supervisor:
Salling, Kim Bang (Intern)
Schneider-Tilli, Jan Erik (Ekstern)
Main Supervisor:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Ansat eksternt
Project: PhD

Evaluering af Sundhedsfremmeprojektet Marmormolen in Motion
Planning and Management of the Built Environment

Department of Management Engineering

TI
Period: 01/06/2011 → 01/06/2014
Number of participants: 2
Acronym: ESMM
Project participant:
Jørgensen, Kirsten (Intern)
Schultz, Casper Siebken (Intern)

Global Product Development
Most Danish companies have globalised a large part of their development process; from idea generation to implementation. This has created many new possibilities but also new challenges. Researchers at DTU Management engineering are working on creating a guide to Danish companies regarding ‘best practice’ within global product development. The project is sponsored by the Danish Industry Fond (Industriens Fond).

Department of Management Engineering
Period: 01/06/2011 → 31/12/2011
Number of participants: 2
Project ID: 81196
Project participant:
Herbert-Hansen, Zaza Nadja Lee (Intern)
Project Manager, organisational:
Ahmed-Kristensen, Saeema (Intern)

Financing sources
Source: Forsk. Private danske - Fonde
Name of research programme: Forsk. Private danske - Fonde
Amount: 388,364.00 Danish Kroner

Implementation of Environmental Improvements through Product Development
This project focuses on aiding companies in the actual implementation of ecodesign, through best practice case studies and guidelines. It is a continuation of the earlier "MPU" project.
Cocktail - Combination effects of endocrine disrupters

Project background:
Regulation of chemical substances is traditionally based on knowledge of exposure and effects of each substance separately. This requires that one knows how much we humans are exposed to of each compound, as well as the effects of each of compound.

For the last twenty years insufficient knowledge about cocktail effects (the effects that can occur when substances are found together) and the absence of reliable tools for risk assessment of chemical mixtures has been a source of concern, both in regards to regulation of chemicals, but also concerning development of products and productions methods. The concern has been that the traditional approach to risk assess one substance at a time does not take into account the effects that can occur when substances are found together (cocktail effects).

This concern has led to funding of a 4-year research project, the Cocktail project, supported by the Danish Veterinary and Food Administration (DVFA)

Focus cocktail project:
The focus of the project is the risk of combinations of endocrine disruptors, and the aim of the project is to provide new practical knowledge on combination effects including effects of each substance and for public exposure to these substances.

The primary objectives are:
Specific recommendations for risk assessment of mixtures of substances including:

- 5-year overview of the Danish population's exposure to food chemical contaminants
- Knowledge building on combination effects of chemicals
- Knowledge building in modeling of the combination effects and exposure
Develop strategy for evaluation of food contact materials
New potential endocrine disruptors and development of methods to find them
New technologies to elucidate the effect of chemicals mechanisms such as metabolomics and bioinformatics

The aim is primarily to develop tools for the assessment of combination effects that can actually be used by the DVFA in the risk assessment of chemicals. Currently, these tools are generally non-existent, even at international level, and must be developed from scratch. This means in a broader perspective, that the goal is to build knowledge, develop methods and establish a strong Danish platform at international level in food chemistry and toxicology, which provides the basis for future preparedness in food chemical safety.

The project includes 7 ‘work packages’, each of which focuses on exposure and/or effects and/or risk assessment:
WP 1 and 2 focuses on experimental work with the aim of generating data and knowledge on toxicological effects.
WP 3 aims to develop mathematical models, which can be used as in a practical tool for in risk assessment of combinations/mixtures developed in WP 7

Exposure to food contaminants is included in the experimental plan in WP 4 and 6, and a practical approach for the assessment of new food contact materials will be developed in WP 5.
In WP 5 and WP 6 the studies will address toxicological effects of new potential problem substances (e.g. substances in food contact materials and mycotoxins in crops).

National Food Institute
Division of Toxicology and Risk Assessment
Division of Food Chemistry
Department of Systems Biology
Department of Management Engineering
Brunel University
University of Alberta
U.S. Environmental Protection Agency
The Food and Environment Research Agency
University of Rennes
Period: 01/05/2011 → 31/12/2014
Number of participants: 15
Acronym: Cocktail
Project participant:
Taxvig, Camilla (Intern)
Hadrup, Niels (Intern)
Petersen, Annette (Intern)
Petersen, Jens Hejslev (Intern)
Rasmussen, Peter Have (Intern)
Lykkeberg, Anne Kruse (Intern)
Sharma, Anoop Kumar (Intern)
Pedersen, Gitte Alsing (Intern)
Frandsen, Henrik Lauritz (Intern)
Granby, Kit (Intern)
Pedersen, Mikael (Intern)
Binderup, Mona-Lise (Intern)
Hass, Ulla (Intern)
Trier, Xenia (Intern)
Project Manager, academic:
Vinggaard, Anne Marie (Intern)

Financing sources
Source: Public research council
Name of research programme: Ministry of Food, Agriculture and Fisheries; The Danish Veterinary and Food Administration (DVFA)
Web address: http://en.fvm.dk/the-ministry/danish-veterinary-and-food-administration/
Amount: 35,000,000.00 Danish Kroner
Project
Disaggregate activity-based traffic assignment modelling

Department of Transport
Period: 01/05/2011 → 23/02/2015
Number of participants: 7
Phd Student:
Rasmussen, Thomas Kjær (Intern)
Supervisor:
Frederiksen, Rasmus Dyhr (Intern)
Prato, Carlo Giacomo (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Larsen, Allan (Intern)
Bekhar, Shlomo (Ekstern)
Cantarella, Giulio Erberto (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Activity-based modeling of transport demand

Department of Transport
Period: 01/04/2011 → 24/09/2015
Number of participants: 6
Phd Student:
Thorhauge, Mikkel (Intern)
Supervisor:
Cherchi, Elisabetta (Intern)
Main Supervisor:
Rich, Jeppe (Intern)
Examiner:
Møller, Mette (Intern)
Börjesson, Maria (Ekstern)
Ortúzar, Juan De Dios (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Energy Policy Instruments in an EU context

Department of Management Engineering
Period: 01/04/2011 → 29/09/2014
Number of participants: 6
Phd Student:
Kitzing, Lena (Intern)
Supervisor:
Mitchell, Catherine (Ekstern)
Main Supervisor:
Morthorst, Poul Erik (Intern)
Examiner:
Andersen, Per Dannemand (Intern)
Hohmeyer, Olav (Ekstern)
Veum, Karina (Ekstern)
**Financing sources**
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

**Integrated risk management framework for assessment of climate impacts and adaptation options**
Department of Management Engineering
Period: 01/04/2011 → 30/04/2013
Number of participants: 3
Phd Student:
Hansen, Malene Kauffmann (Intern)
Supervisor:
Lüthje, Mikael (Intern)
Main Supervisor:
Halsnæs, Kirsten (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

**Trafiksikkerhedens politiske og institutionelle vilkår**
Traffic Safety
Department of Transport
Period: 01/04/2011 → 31/03/2012
Number of participants: 2
Acronym: TS-Policy
Project ID: 35285
Project participant:
Siren, Anu Kristiina (Intern)
Project Manager, organisational:
Sørensen, Claus Hedegaard (Intern)

**Financing sources**
Source: Sam.arb.aftaler, Private danske - Fonde
Name of research programme: Sam.arb.aftaler, Private danske - Fonde
Amount: 1,285,000.00 Danish Kroner
Project

**GreenShipping - Green Ship Routing and Scheduling**
Christos A. Kontovas has recently been awarded a highly competitive Marie Curie Career Integration Grant (FP7-PEOPLE-2013-CIG) by the European Commission within the Seventh Framework Programme (FP7). The grant will support execution of a 2-year project on Green Maritime Logistics.

The project's main innovation is attributed to the synthesis of its two main pillars, (a) maritime logistics research (especially related to ship outing and scheduling problems) and (b) emissions-related research. This is an area of paramount importance for international shipping and will be even more so in the future. The proposed research would enhance the state of the art in this area by investigating possible reformulations of existing models so as to incorporate emissions considerations and by developing new models altogether that explicitly include the emissions dimension.

A key aspect of the project concerns the link of the logistics/emissions research to the relative regulatory background and the potential policy implications.

Department of Transport
Transport optimisation and technique
Period: 01/03/2011 → 29/02/2016
Number of participants: 1
Acronym: GreenShipping
Project participant:
Kontovas, Christos A. (Intern)
Eco-Innovation Exchange Workshops : DASTI Bi-Lateral Network Projects

This proposal aimed to strengthen the research collaboration between the Center for Design Research at Stanford University (hereafter referred to as “CDR”) and the Department of Management Engineering at the Technical University of Denmark (hereafter referred to as “DTU”) in the field of sustainable product and service innovation, by adopting a collaborative, action-research approach to methodology implementation in international industrial companies. We ran a short workshop series, consisting of three intensive industry workshops, each with its own time for preparation and subsequent reflection/analysis. For the first two workshops (held in USA), we partnered up with two research-active, USA-based companies, Panasonic and Steelcase, who acted as the industrial participants for the workshops. Both CDR and DTU have a history of research collaboration with both of these companies and had therefore well-established connections inside both organisations. Previous collaborations include interviews, in-depth studies, student projects and workshop orchestration within a strategic area for the respective companies. The third workshop was be held in Denmark, where we invited three Danish companies to join the discussions and exercises, together with Panasonic and Steelcase. This project focused on two main research phenomena, sustainability and innovation, and aimed to begin to uncover the connections between the two in an industrial setting. It was our working hypothesis that sustainability demands for a globally active, industrial organisation can lead to innovative solutions in terms of business development opportunities. Also, it was our hypothesis that an organisation striving towards innovation will increasingly need to live up to the key requirements of sustainability. In the context of product development, sustainability has been an area of focus for some time now. The past two decades have seen many efforts from academia and industry alike, towards the consideration of sustainability during product development. The result is that there are now hundreds of guidelines, tools, calculators and consultants available to aid the process of design optimisation for sustainability. However, the project team's and other researchers' studies show that companies’ uptake of these many tools is sparse. In terms of innovation, there are a plethora of theories and schools of thought regarding industrial innovation. These theories can be roughly classified in three main areas of technology-driven innovation (new things make new markets), user-driven innovation (seen from a traditional lead-user viewpoint) or idea-driven innovation (with focus on the creativity of the individual entrepreneur). In this project we made the first attempts at establishing a focus on sustainability-driven innovation. Our scientific research base was on the above-mentioned fields.

Engineering Design and Product Development

Department of Management Engineering

Stanford University

Panasonic R&D Company of America

Steelcase Inc.

Lego Group

Coloplast Danmark A/S

Velux A/S

Period: 01/03/2011 → 31/12/2011

Number of participants: 14

Eco-innovation, Ecodesign, Service innovation

Acronym: EIEW

Project ID: 81104

Contact person:

Junqua, Jean-Claude (Ekstern)

Nahikian, Angela (Ekstern)

Owens, Kevin (Ekstern)

Faltum, Jes (Ekstern)

Skals, Peter (Ekstern)

Andreassen, Karen (Ekstern)

Project participant:

Bey, Niki (Intern)

Mougaard, Krestine (Intern)

Restrepo-Giraldo, John Dairo (Intern)

Leifer, Larry (Ekstern)

Steinert, Martin (Ekstern)

Toye, George (Ekstern)

Faludi, Jeremy (Ekstern)

Project Manager, organisational:

McAlone, Tim C. (Intern)
An integrated Multi-level Framework for Life Cycle Sustainability Assessment Case study: Production of High-grade Concrete from Construction and D estruction

Department of Management Engineering
Period: 15/02/2011 → 19/01/2017
Number of participants: 6
Phd Student:
Bozhilova-Kisheva, Kossara Petrova (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Olsen, Stig Irving (Intern)
Examiner:
Bey, Niki (Intern)
Petersen, Elisabeth Ekener (Ekstern)
Zamagni, Alessandra (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

EIS - Strategic research alliance for Energy Innovation Systems and their dynamics - Denmark in global competition
EIS Strategic research alliance on Energy Innovation Systems and their dynamics carries out research analyses on energy innovation systems and connects leading researchers working on the topic. Through this, the alliance creates important new knowledge about the innovation systems and the roles they play for moving towards renewable and sustainable energy systems in the future. By active knowledge dissemination and interaction with societal stakeholders, the alliance is expected to contribute to strategy development and innovation in individual areas of energy technology as well as to policy and strategies on a more general level. EIS contains a row of sub-projects, including PhD projects and post-doc projects. It is funded by the Danish Council for Strategic Research, the Programme Commission on Sustainable Energy and Environment, primarily, and by the project partners. The alliance runs from 2011 to 2016.

Department of Management Engineering
Technology and Innovation Management
NiFU Nordic Institute for Studies in Innovation, Research and Education
Aarhus University
Aalborg University
Copenhagen Business School
Chalmers University of Technology
Utrecht University
Swiss Federal Institute of Aquatic Science and Technology
Zentrum für Europäische Wirtschaftsforschung
Period: 01/02/2011 → 30/11/2016
Number of participants: 7
Number of related Ph.D. students: 5
Acronym: EIS
Project participant: Franceschini, Simone (Intern)
ACTUM
The objective of the project is to provide an activity-based framework that is able to capture and describe individual and household activity patterns within a multi-modal transport environment that is characterized by a diversity of travel mode combinations. An improved knowledge about individual and household activity patterns will increase the comprehension of behavioural responses to future transport policies (e.g., road pricing schemes and travel demand management interventions). Therefore, transport models developed on the basis of the research will provide more accurate responses to policy instruments than existing methods and facilitate a right way towards a sustainable balance between mobility and transport externalities. The ambition is to develop a theoretically consistent and coherent framework for activity-based modelling and forecasting of urban passenger transport. This includes (i) building activity chains for home and out-of-home activities, (ii) estimating how transport demand is derived from the activity chains, (iii) modelling the activity interaction between household members, (iv) capturing the timing of activities and their duration, (v) linking route choice with the choice of activities at the disaggregate level, and (vi) modelling long-term decisions with respect to, for example, car ownership as condition for forecasting daily activity patterns and travel decisions.

Department of Transport
Period: 01/02/2011 → 01/02/2013
Number of participants: 1
Project participant:
Mulalic, Ismir (Intern)

Assessing the potential market for electric vehicles
Department of Transport
Period: 01/02/2011 → 25/08/2014
Number of participants: 6
Phd Student:
Jensen, Anders Fjendbo (Intern)
Supervisor:
Mabit, Stefan Eriksen (Intern)
Main Supervisor:
Cherchi, Elisabetta (Intern)
Examiner:
Kveiborg, Ole (Intern)
Bierlaire, Michel (Ekstern)
Heydecker, Benjamin G. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Anden EU-finansiering
Project: PhD

Drivers and Limits
Continued growth of car transport, rapid expansion of air travel, and increased freight transport makes transport the fastest growing source of greenhouse gas emissions worldwide. Advances in transport technologies leading to improved energy efficiency and reduced carbon intensity of fuels have been offset by steady increases in e.g.: demand of heavier vehicles, demand for leisure trips, longer commuting, and a growing role of high speed modes. This trend sets a distinct contrast with the greenhouse gas reduction target. Few dispute that solutions must be found to this problem, but there are significant uncertainties about if and how to intervene in transport demand growth in time, without damaging the economy. The aim of this project is to gain a deeper understanding into the drivers and limits of structural transport demand that can help determine how to reduce transport growth – and thereby climate and congestion effects - with minimal negative effect on the economy. We focus on four important themes in the description of the transport drivers: long distance trips; demography and socioeconomic; urban structure and infrastructure; and freight. Despite being four of the main challenges
in transport growth, knowledge about their relative importance and the influence is not very well understood. The themes will be explored using both qualitative and quantitative methods. The theoretical foundations of the project comprise economic theory, spatial and environmental planning and social psychology. The empirical analyses will be based on existing transport databases combined with qualitative interviews and surveys. The outcome of the analyses serves as the basis for considering whether limiting trends can be expected in transport and how these may evolve over time. We formulate alternative visions and develop a scenario back casting process where alternative policies will be examined.

Department of Transport
Period: 01/02/2011 → 31/12/2012
Number of participants: 1
Project participant: Mulalic, Ismir (Intern)

**Exploratory collaborations and workshops in Knowledge approaches to facilitate innovation in bio-engineering**

The research is focused upon facilitating the creation of innovation in engineer-ing products, where analogies from biological systems can be used to simulate design ideas. The long-term outcomes of the research will include new represen-tations for novel knowledge and information tools to facilitate innovation focus-ing on the use of analogies from both artificial and biological systems. The re-search comes from theories from: engineering design; knowledge representation and; design thinking. In addition an understanding of biological systems is needed. To this ef-fect the research will build upon the following platform, combining the back-grounds of the applicant (DTU) and the foreign partner (IISc). Saeema’s research in ontology to describe engineering design EDIT (a patented approach to datamining) and a methodology for creating ontologies, and research in analogies (taking ideas from one product and applying to another) are starting points for the research. These will be compared and combined to the work of Amaresh Chak-rabarti on knowledge representation of function-structure-behaviour of artificial as well as biological systems and used for design synthesis with industrial appli-cations to mechanical transmissions, Panasonic. Both Saeema Ahmed-Kristensen and Amaresh Chakrabarti have spent time in the Engineering Design Centre, Cambridge, and hence both adhere to a high level of research rigour, and hence have a familiarity of each other research approaches. Funded by Forskings og Innovation Strategic council in Bilateral network activities

Department of Management Engineering
Indian Institute of Science
Period: 01/02/2011 → 01/09/2012
Number of participants: 2
Project ID: 81188
Project participant:
Chakrabarti, Amaresh (Ekstern)
Project Manager, organisational:
Ahmed-Kristensen, Saeema (Intern)

**Financing sources**
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 312,912.00 Danish Kroner

**Healthcare Innovation Lab**
Den 1. februar 2010 søsatte det tidligere Center for Sundhedsinnovation (nu en del af Videncenter for Innovation og Forskning) spydspidsprojektet “Healthcare Innovation Lab” som et Offentligt-Privat Innovationssamarbejde (OPI) mellem 26 partnere.

DTU bidrager til 2 prototyper og koncepter som direkte skal kunne anvendes og implementeres på relevante hospitalsafdelinger:

* Delprojekt A: Fremtidens Ambulatorium - Funktions- og organisatorisk planlægning:
  At afstemme forskellige behov og perspektiver for patienter og sundhedsfaglige medarbejdere i et innovativt koncept for arbejdsgange og fysisk indretning af et ambulatorium. Gynækologisk ambulatorium på Herlev Hospital deltager i projektet.

* Delprojekt B: Mobilt overblik over prøvesvar:
  At give klinikere og patienter overblik over status på prøvesvar og dermed øge patientsikkerhed/patienttryghed, kvalitet og effektivitet i klinikeres arbejdsgange samt hospitalesskonomi. Gastro-endokrinologisk afdeling og akut modtageafdeling på Bispebjerg Hospital deltager i projektet.
The effectiveness of South-South Cooperation: Climate Change Technology Transfer from Brazil to Latin American Countries

Department of Management Engineering
Period: 01/02/2011 → 19/12/2014
Number of participants: 6
Phd Student:
Bry, Sandra (Intern)
Supervisor:
Haselip, James Arthur (Intern)
Main Supervisor:
Hinostroza, Miriam L. (Intern)
Examiner:
Nygaaard, Ivan (Intern)
Christensen, Steen Fryba (Ekstern)
Milani, Carlos (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
PhD Project:

Vietnam - Facilitating Implementation Readiness for Mitigation (FIRM)
Developing countries are requesting international financial and technical support to lay the foundations for and start implementing low carbon energy development paths rather than follow a business-as-usual fossil energy trajectory. In addition to reducing greenhouse gas emissions, additional benefits – employment generation, reduced expenditures on imports of fossil fuels, and improvements in local environmental quality, among others – provide strong arguments for adopting a low carbon approach to economic growth. The ‘Facilitating Implementation and Readiness for Mitigation’ project (FIRM) will help six to eight developing countries make a “quick start” on technology-based mitigation activities that are compatible with the evolving concept of Nationally Appropriate Mitigation Actions (NAMAs). FIRM will provide focused technical advice and strengthen the capabilities of energy and environmental policy makers and experts – and the institutions in which they work. The result will be the accelerated implementation of public and private mitigation projects within a NAMA framework, and reduced emission of greenhouse gases.

Department of Management Engineering
Cost-Efficient and sustainable deployment of renewable energy sources towards the 20% target by 2020, and beyond

Department of Management Engineering
Energy Research Centre of the Netherlands
Centro de Investigaciones Energéticas, MedioAmbientales y Technológicas
ENVIROS
Öko-Institut
IT Power Ltd.
ENERO
Period: 01/01/2011 → 31/12/2012
Number of participants: 3
Support instruments, renewables, EU targets
Acronym: RES4LESS
Project participant:
Klinge Jacobsen, Henrik (Intern)
Pade, Lise-Lotte (Intern)
Nielsen, Lise Skovsgaard (Intern)
Risk-based design in a changing climate
The main objective of the RiskChange project is to establish a consistent scientifically-based framework for risk-based design of critical infrastructure that includes state-of-the-art knowledge of projected changes in climate extremes.
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Department of Environmental Engineering
Urban Water Engineering
Period: 01/01/2011 → 31/12/2014
Number of participants: 5
climate change adaptation, climate risk, extreme events, infrastructure
Acronym: RiskChange
Project participant:
Gregg, Jay Sterling (Intern)
Halsnæs, Kirsten (Intern)
Kaspersen, Per Skougaard (Intern)
Äström, Helena Lisa Alexandra (Intern)
Arnbjerg-Nielsen, Karsten (Intern)
Project

Fremtidens ledere i bygge og anlæg
Department of Management Engineering
Production and Service Management
Period: 01/01/2011 → 01/07/2014
Number of participants: 1
Acronym: FLIBA
Project participant:
Kristiansen, Kristian (Intern)
Project

Generativ brugerdræven innovation og byudvikling gennem virkelighedsspil
Department of Management Engineering
Period: 01/01/2011 → 31/07/2012
Number of participants: 3
Phd Student:
Munthe-Kaas, Peter (Intern)
Supervisor:
Jørgensen, Ulrik (Intern)
Main Supervisor:
Hoffmann, Birgitte (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

New high-quality mined nanomaterials mass produced for plastic and wood-plastic nanocomposites
Department of Management Engineering
Period: 01/01/2011 → 19/03/2015
Number of participants: 6
Phd Student:
Miseljic, Mirko (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Olsen, Stig Irving (Intern)
Examiner:
Birkved, Morten (Intern)
Hansen, Steffen Foss (Intern)
Hischier, Roland (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

Strategic platform for innovation and research in Intelligent Power
Department of Management Engineering
Department of Electrical Engineering
Center for Electric Power and Energy
Period: 01/01/2011 → 01/07/2016
Number of participants: 5
Acronym: IPOWER
The Optimal Treatment of Waste

Affald udgør i dag en betydelig del af energiproduktionen i Danmark. Andelen forventes at stige i fremtiden, hvis affaldsmængderne stiger og energiudnyttelsen fortsat bliver bedre. For at kunne integrere blandt andet vindkraft er det afhængigt, at det øvrige energisystem kan agere fleksibelt, hvilket er udfordring med affald. Øget liberalisering ændrer derudover rammerne for affaldshåndteringen og dens regulering. For at kunne sikre opnåelse af mål vedrørende venstre af affald der genanvendes under de ændrede forhold, er det nødvendigt at udvikle nye beslutningsstøtteværktøjer til både affaldsforbrændingsanlæg og myndigheder. I dette projekt udvikles 4 typer værktøjer til planlægning af affaldshåndtering med fokus på både genanvendelse og energiproduktion. Til brug for affaldsforbrændingsanlæggene udvikles i samarbejde med et større affaldsforbrændingsanlæg to nye beslutningsstøtteværktøjer: en model der optimiserer affaldshåndtering set fra et økonomisk perspektiv og en model der vurderer affaldshåndtering fra et miljø- og ressourcemæssigt perspektiv. Begge modeller opskaleres til at håndtere nationale analyser til brug for nationale myndigheder. Dette kombineres med videreudvikling af to øvrige nationale modeller: en økonometrisk model til fremskrivning af affaldsmængder (FRIDA) og en energi system analyse model (Balmorel). Dette vil gøre det muligt at analysere og vurdere betydningen af at anvende affald til energiproduktion i fremtidens energi system.

Department of Management Engineering
Aalborg University
University of Southern Denmark
KTH - Royal Institute of Technology
Lund University
RAM-lose
Holmboe Consult
Swedish Environmental Research Institute
Amagerforbrænding

Renonord
Period: 01/01/2011 → 31/12/2014
Number of participants: 4

Affald
Acronym: TOPWASTE
Project ID: 1200268/ 82156
Project participant:
Møller Andersen, Frits (Intern)
Juul, Nina (Intern)
Larsen, Helge V. (Intern)
Project Manager, organisational:
Münster, Marie (Intern)
Financing sources
Source: Public research council
Name of research programme: Det Strategiske Forskningsråd
Amount: 14,999,724.00 Danish Kroner

Relations
Publications:
Alternatives for Future Waste Management in Denmark
Challenges when Performing Economic Optimization of Waste Treatment

Trivsel i teams mellem organisation, relationer og faglighed
Work, Technology and Organisation
Department of Management Engineering
Period: 01/01/2011 → 31/12/2013
Number of participants: 6
Project ID: 81177
Project participant:
Buch, Anders (Intern)
Weller, Tina (Intern)
Bovbjerg, Kirsten Marie (Ekstern)
Kamp, Anette (Ekstern)
Dybbro, Betina (Ekstern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 3,657,761.00 Danish Kroner

Optimering af kørselsafgifter
Department of Transport
Period: 15/12/2010 → 07/10/2015
Number of participants: 3
Phd Student:
Pedersen, Thomas Ross (Intern)
Supervisor:
Fosgerau, Mogens (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

The effect of cycling policies
Department of Transport
Period: 15/12/2010 → 25/02/2016
Number of participants: 6
Phd Student:
Halldórsdóttir, Katrín (Intern)
Supervisor:
Prato, Carlo Giacomo (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Nielsen, Thomas Alexander Sick (Intern)
Geurs, Karst T. (Ekstern)
Shiftan, Yoram (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Dynamisk optimering af skønmalægning på gymnasielle uddannelser
Department of Management Engineering
Period: 01/12/2010 → 26/05/2014
Number of participants: 6
Phd Student:
Sørensen, Matias (Intern)
Supervisor:
Herold, Michael Bigom (Ekstern)
Main Supervisor:
Stidsen, Thomas Jacob Riis (Intern)
Examiner:
Røpke, Stefan (Intern)
Kendall, Graham (Ekstern)
Lubbecke, Marco (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Explaining the survival rate of new pharmaceutical products in clinical trials
Department of Management Engineering
Period: 01/12/2010 → 30/09/2014
Number of participants: 8
Phd Student:
Buonansegna, Erika (Intern)
Supervisor:
Li-Ying, Jason (Intern)
Maier, Anja (Intern)
Schultz, Carsten (Ekstern)
Main Supervisor:
Salomo, Søren (Intern)
Examiner:
Perunovic, Zoran (Intern)
Knudsen, Mette Præst (Ekstern)
Kock, Alexander (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Matematisk algoritme til optimal valgfagstildeling
Department of Management Engineering
Period: 01/12/2010 → 26/05/2014
Number of participants: 6
Phd Student:
Municipalities as intermediaries reconstructing relations between cityscape and mobility

Department of Management Engineering
Period: 01/12/2010 → 31/07/2012
Number of participants: 3
PhD Student:
Harders, Anne Katrine Braagaard (Intern)
Supervisor:
Næss, Petter (Ekstern)
Main Supervisor:
Elle, Morten (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Statistisk modellering af trafikuheds hyppighed og alvorlighedsgrad

Department of Transport
Period: 01/12/2010 → 28/04/2016
Number of participants: 6
PhD Student:
Janstrup, Kira Hyldekræ (Intern)
Supervisor:
Prato, Carlo Giacomo (Intern)
Main Supervisor:
Kaplan, Sigal (Intern)
Examiner:
Møller, Mette (Intern)
Laajunen, Timo Juhani (Ekstern)
Várhelyi, András (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Development and application of a standardized methodology for the PROspective SUstainability assessment of Technologies

Department of Management Engineering
Period: 15/11/2010 → 23/02/2015
Number of participants: 6
PhD Student:
Dong, Yan (Intern)
Environmental assessment of biomass based materials

Department of Management Engineering
Period: 15/11/2010 → 26/05/2014
Number of participants: 5
Phd Student:
Jørgensen, Susanne Vedel (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Birkved, Morten (Intern)
Henderson, Andrew D. (Ekstern)
Lützhøft, Hans-Christian Holten (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Promoting Low Carbon Transport in India
A UNEP project funded under International Climate Initiative of German government. The project aims to develop a Transport Action Plan at national level and Low Carbon Comprehensive Mobility Plans for upto 4 cities.

Department of Management Engineering
UNEP Risø Centre
Period: 01/11/2010 → 01/12/2013
Number of participants: 4
Low Carbon Development, Transport
Project participant:
Sharma, Sudhir (Intern)
Rogat Castillo, Jorge Enrique (Intern)
Goswami, Surabhi (Intern)
Project Manager, organisational:
Dhar, Subash (Intern)

Relations
Publications:
Low carbon city: A guidebook for city planners and practitioners
Electric Vehicles Scenarios and a Roadmap for India

Anerkendende Lean - Implementering af en bæredygtig forbedringskultur
Department of Management Engineering
Period: 01/11/2010 → 20/06/2014
Number of participants: 6
Phd Student:
Hansen, David (Intern)
Supervisor:
Kongsbak, Henrik (Ekstern)
Main Supervisor:
Møller, Niels (Intern)
Examiner:
Jensen, Per Langaa (Intern)
Christiansen, Thomas Bøhm (Intern)
Liker, Jeffrey (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Business Intelligence i Engineeringvirksomheder
Department of Management Engineering
Period: 15/10/2010 → 26/05/2014
Number of participants: 6
Phd Student:
Ulrikkeholm, Jeppe Bjerrum (Intern)
Supervisor:
Mortensen, Niels Henrik (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Jacobsen, Peter (Intern)
Jensen, Lars Jepsen (Ekstern)
Sunnersjö, Staffan (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Community Based Adaptation to climate change in Sub Saharan Africa - the role of local institutions and social capital
Department of Management Engineering
Period: 15/10/2010 → 30/10/2015
Number of participants: 6
Phd Student:
Schaer, Caroline (Intern)
Supervisor:
Hahonou, Eric Komlavi (Ekstern)
Main Supervisor:
Nygaard, Ivan (Intern)
Examiner:
Olsen, Karen Holm (Intern)
Funder, Mikkel (Ekstern)
Vincent, Katherine (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

Economic Assessment of Global Bioenergy Resources
Department of Management Engineering
Period: 01/10/2010 → 20/06/2014
Number of participants: 6
Phd Student:
Hvid, Anna (Intern)
Supervisor:
Henningsen, Geraldine (Intern)
Main Supervisor:
Halsnæs, Kirsten (Intern)
Examiner:
Klinge Jacobsen, Henrik (Intern)
Markandya, SLET (Anil) (Ekstern)
Tarp Jensen, Henning (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

Optimal Aircraft Gate Assignment on a Strategic, Tactical and Operational Level
Department of Management Engineering
Period: 01/10/2010 → 26/05/2014
Number of participants: 7
Phd Student:
Justesen, Tor Fog (Intern)
Supervisor:
Dohn, Anders Høeg (Intern)
Meinecke, Dan (Ekstern)
Main Supervisor:
Larsen, Jesper (Intern)
Examiner:
Larsen, Allan (Intern)
Cohn, Amy Ellen Mainville (Ekstern)
Vaaben, Bo Valdemar (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Udvikling af metoder til ledelse af sikkerhed hos danske vognmænd
Department of Management Engineering
Planning and Management of the Built Environment
Codan forsikring
Period: 01/09/2010 → 01/09/2014
Number of participants: 1
Number of related Ph.D. students: 1
Project participant:
Jørgensen, Kirsten (Intern)

Relations
Press / Media items:
Fælles front mod ulykker
Project

Connovate - optimized building system using High Performance Concrete
Vision The parties will develop a new sustainable building system using High Performance Concrete (HPC) for sandwich elements. The system meets the visions of low energy use, low material consumption, material recycling and low CO2
emission throughout the entire life cycle, contributing to Denmark fulfilling its international obligations as well as expanding Denmark's international position through export of an innovative building technology. The system will represent the next step in the construction industry's increasing use of prefabricated elements, making it possible to offer the end user better solutions for insulation, increased living space and better indoor air quality at a competitive price. As a result of the superior performance compared to current refurbishment methods, the system is expected to play a central role in the foreseen energy refurbishment of the existing building stock. Focused on global warming, this allows for legislation on the issue to be further tightened. Objective The aims are to develop and certify the basic elements for a new HPC building system and launch it on the Danish market prior to introducing the system to further markets. We will establish Connovate as a joint IPR holder and a company to develop business models for future development of products, markets and systems globally. IPR will be shared between Connovate, DTU and IPU and continuously strengthened throughout the development period supporting the core business. Success criterion The overall success criterion is to develop the basic HPC building elements and to create an effective production layout. A further criterion is the establishment of a company (Connovate) that on the basis of innovation and strong IPR's will secure the continuity of developing the HPC system. A third criterion is to create jobs in a broad range of companies in Denmark and gain increased market share in export markets. Finally, we expect a measurable positive impact on the environmental challenges.

Department of Management Engineering
Department of Civil Engineering
Arkitema K/S
Contec ApS
Smith Innovation
DELTA
Dansk Brand- og Sikringsteknisk Institut
Institute for Product Development
Period: 01/09/2010 → 31/08/2013
Number of participants: 10
Project ID: 81148
Project participant:
Hvam, Lars (Intern)
Mortensen, Niels Henrik (Intern)
Serwin, Bo (Ekstern)
Nieport, Christian (Ekstern)
Svendsen, Svend (Intern)
Stang, Henrik (Intern)
Olesen, Henrik (Ekstern)
Bertelsen, Ib (Ekstern)
Gregersen, Johan (Ekstern)
Project Manager, organisational:
Bro, Karsten (Ekstern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Project

Modelling of pesticide emissions for Life Cycle Inventory analysis: model development, applications and implications

Department of Management Engineering
Period: 01/09/2010 → 21/02/2014
Number of participants: 6
Phd Student:
Dijkman, Teunis Johannes (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Main Supervisor:
Birkved, Morten (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Udvikling af sikkerhedskultur og bevidsthed hos danske vognmænd

Department of Management Engineering
Period: 01/09/2010 → 28/10/2017
Number of participants: 6
Phd Student:
Hansen, Mette Bach (Intern)
Supervisor:
Poulsen, Signe (Intern)
Main Supervisor:
Ipsen, Christine (Intern)
Examiner:
Seim, Rikke (Intern)
Albrechtsen, Eirik (Ekstern)
Olsen, Kirsten Bendix (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

Uncertainty calculation in Transport forecasts and models

Department of Transport
Period: 01/09/2010 → 19/12/2014
Number of participants: 5
Phd Student:
Manzo, Stefano (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Overgaard, Christian (Ekstern)
Brundell-Freij, Karin (Ekstern)
Jong, Gerard C. de (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Green Energy and Low Carbon Development
The Danida Fellowship Course “Green Energy and Low Carbon Development” is a three-week training course to be held in Copenhagen, Denmark, 19 May – 6 June 2014. The course will explore green energy and low carbon development business opportunities in developing countries. The course is relevant for managers and decision makers from the private and public sectors seeking to develop their skills within improved energy efficiency, renewable energy and new markets related to trading in CO2 reductions. The course supports that new ideas are developed into realistic action plans for business development and enabling frameworks for public-private partnerships.

The course is being held for the 5th year in 2014. The contract is for one year at a time.

Department of Management Engineering
Betydningen af holdning, adfærd og socio-demografiske faktorer for bilisters uheldsrisiko

Department of Transport
Period: 01/08/2010 → 22/11/2013
Number of participants: 6
Phd Student:
Martinussen, Laila Marianne (Intern)
Supervisor:
Prato, Carlo Giacomo (Intern)
Main Supervisor:
Møller, Mette (Intern)
Examiner:
Siren, Anu Kristiina (Intern)
Ben-Ari, Orit Taubman (Ekstern)
Stradling, Stephen Glyn (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Facilities Management and usability Briefing: How to capture and transform user needs and experiences to improve the built environment?

Department of Management Engineering
Period: 01/08/2010 → 28/04/2016
Number of participants: 7
Phd Student:
Fronczek-Munter, Aneta (Intern)
Supervisor:
Meel, Juriaan van (Ekstern)
Sperschneider, Werner (Ekstern)
Main Supervisor:
Jensen, Per Anker (Intern)
Examiner:
Nielsen, Susanne Balslev (Intern)
Hansen, Geir K. (Ekstern)
Nenonen, Suvi (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD
Bæredygtig omstilling af samfundets energisystemer - med særligt fokus på hverdagspraksisser i det intelligente hjem

Department of Management Engineering  
Period: 01/06/2010 → 31/07/2012  
Number of participants: 3  
Phd Student: Nyborg, Sophie (Intern)  
Supervisor: Hoffmann, Birgitte (Intern)  
Main Supervisor: Røpke, Inge (Intern)  

Financing sources  
Source: Internal funding (public)  
Name of research programme: Institut stipendie (DTU) Samf.  
Project: PhD

Brug af ny teknologi af logistik og servicesystemer i sundhedssektoren

Department of Management Engineering  
Period: 01/06/2010 → 20/09/2013  
Number of participants: 5  
Phd Student: Jørgensen, Pelle Morten Thomas (Intern)  
Main Supervisor: Jacobsen, Peter (Intern)  
Examiner: Hvam, Lars (Intern)  
Bilberg, Arne (Intern)  
Ceglarek, Darek J. (Ekstern)  

Financing sources  
Source: Internal funding (public)  
Name of research programme: Institut, samfinansiering  
Project: PhD

Innovation network for energy efficient and sustainable construction

The innovation network for energy efficient and sustainable construction - InnoBYG - is the innovation network of the construction industry in Denmark. The Danish Agency for Science, Technology and Innovation has granted a co-financing of 20 million DKK to the network.

InnoBYG brings the industry together across professional competency. The network has focus on knowledge sharing, networking and development of the industry among its members, both domestically and internationally.

Between 2010-2014 InnoBYG will facilitate the development of the construction industry by addressing a number of societal and technical challenges, all of which are related to energy efficiency and sustainability in the construction industry.

DTU Management Engineering is responsible for the subproject on development of sustainable business models in construction.

Department of Management Engineering  
Production and Service Management  
Department of Civil Engineering  
Danish Technological Institute  
Danish Construction Association  
Dansk Industri  
Aalborg University
Optimization of baggage handling at airports

Department of Management Engineering
Period: 01/06/2010 → 20/06/2014
Number of participants: 5
Phd Student:
Barth, Torben C. (Intern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Røpke, Stefan (Intern)
Akkerman, Renzo (Intern)
Belien, Jeroen (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut, samfinansiering
Project: PhD

Analyse af sammenhænge mellem struktur og social kapital i sundhedsvæsnet

Department of Management Engineering
Period: 01/05/2010 → 29/09/2014
Number of participants: 7
Phd Student:
Lundstrøm, Sanne Lykke (Intern)
Supervisor:
Kragstrup, Jakob (Ekstern)
Søndergaard, Jens (Ekstern)
Main Supervisor:
Edwards, Kasper (Intern)
Examiner:
Jensen, Per Langaa (Intern)
Gittell, Jody Hoffer (Ekstern)
Jensen, Martin Bach (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Effektive løsningsmetoder til real-tids distributionssystemer

Department of Transport
Period: 01/05/2010 → 31/03/2011
Number of participants: 3
Phd Student:
Buhrkal, Katja Frederik (Intern)
Supervisor:
Repke, Stefan (Intern)
Main Supervisor:
Larsen, Allan (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Life cycle assessment applied to nanomaterials in solid waste management - Focus on human health impact assessment
Department of Management Engineering
Period: 01/05/2010 → 24/03/2014
Number of participants: 6
Phd Student:
Laurent, Alexis (Intern)
Supervisor:
Hellweg, Stefanie (Ekstern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Birkved, Morten (Intern)
Hansen, Steffen Foss (Intern)
Walser, Tobias (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet
Project: PhD

Product/Service-Systems in the Maritime Branch
Private financial support for a PhD project in the area of Product/Service-System Design in the Maritime branch.
Engineering Design and Product Development
Department of Management Engineering
Period: 01/05/2010 → 31/08/2013
Number of participants: 1
Product/Service-Systems (PSS), Service Innovation, Maritime Industry
Project ID: 81097
Project Manager, organisational:
McAloone, Tim C. (Intern)

Financing sources
Source: Forsk. Private danske - Fonde
Name of research programme: Forsk. Private danske - Fonde
Amount: 1,675,000.00 Danish Kroner
Project

Performing temporary spaces for user driven innovation : Forskningsalliance
Department of Management Engineering
Period: 04/04/2010 → 04/04/2014
Number of participants: 2
Project participant:
Lindegaard, Hanne (Intern)
Project Manager, organisational:
Jørgensen, Ulrik (Intern)
A framework for PSS development in a branch with long-lived, complex products

Department of Management Engineering
Period: 01/04/2010 → 31/08/2011
Number of participants: 2
Phd Student:
Nielsen, Teit Anton (Intern)
Main Supervisor:
McAloone, Tim C. (Intern)

Development of a methodology for inclusion of terrestrial ecotoxic impacts of metals in life cycle impact assessment

Department of Management Engineering
Period: 01/04/2010 → 12/12/2013
Number of participants: 6
Phd Student:
Owsianiak, Mikolaj (Intern)
Supervisor:
Rosenbaum, Ralph K. (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Diamond, Miriam Leah (Ekstern)
Lützhøft, Hans-Christian Holten (Intern)

Matematiske modeller som spillere i virksomheders produktudvikling

Department of Management Engineering
Period: 01/04/2010 → 31/07/2012
Number of participants: 3
Phd Student:
Juhl, Joakim (Intern)
Supervisor:
Munk, Anders Kristian (Intern)
Main Supervisor:
Jensen, Torben Elgaard (Intern)

Decoupled visual control for robots based on structured light and weld seam tracking

Engineering Design and Product Development
Climate change is a global threat to ecosystems and vast resources are invested to develop new climatically sustainable technologies. However, the assessments of such climatic sustainability are generally hindered by the absence of appropriate assessment tools of sufficiently broad scope. In the project we will develop "a concept for quantitative environmental sustainability assessment of technologies (e.g. renewable energy) from a climate change and climate protection point of view". Financed by the Villum Kann Rasmussen Foundation

Quantitative Sustainability Assessment

Riso National Laboratory for Sustainable Energy

Climate damage modeling in LCA – quantitative sustainability assessment of future technologies

Financing sources

Source: Gaver, Private danske Fonde
Name of research programme: Gaver, Private danske Fonde
Amount: 1,000,000.00 Danish Kroner

Project
Improving Road Safety: Developing a Basis for Socio-economic Prioritising of Road Safety Measures

The aim of this project is to develop an improved basis for efficient socio-economic prioritising of road safety measures. Road fatalities and injuries are together with congestion the largest externalities connected to transport. The traditional way of predicting road accidents – and thus assessing road safety measures – has been to model accidents as a function of road type and traffic volume only. However, these variables cannot alone explain the trend in accidents over time and moreover, in traditional models the severity and accidents are completely decoupled. This project will overcome these shortcomings and combine the modelling approach with in-depth insight into road user behaviour. This project will use the aggregate and disaggregate parts of the so-called DRAG modelling approach to establish quantitative relations between accidents of various degrees of severity and road user (risk) behaviour, vehicle ownership, infrastructure and economic activity. Moreover, the project will estimate preference-based economic values of road safety measures. As a novelty, accident modelling will include both police recorded accidents and emergency room recorded accidents. In addition, modelling will include individual socio-economic and demographic data from the entire Danish population. Finally, a more qualified inclusion of human behaviour factors, i.e. road user sub group behaviour, in the models will be possible. Methods range from in-depth interviews to statistical modelling. The project is organised in five work packages (WPs), each with defined tasks and scope. Thus, data for WP3 will be documented and provided by WP1 and 2; modelling will take place in WP3, qualification of the models in WP2, development of a scientifically founded valuation method of accidents in WP4, and eventually transforming results into recommendations in WP5.

Traffic Safety

Department of Transport
Period: 01/03/2010 → 28/02/2014
Number of participants: 11
Acronym: IMPROSA
Project ID: 35254
Contact person: Østergaard, Marianne Harms (Intern)
Project participant: Bernhoft, Inger Marie (Intern)
Martinussen, Laila Marianne (Intern)
Janstrup, Kira Hyldeker (Intern)
Lyckegaard, Allan (Intern)
Abele, Liva (Intern)
Project Manager, organisational: Hakamies-Blomqvist, Liisa (Intern)
Hels, Tove (Intern)
Møller, Mette (Intern)
Rich, Jeppe (Intern)
Kveiborg, Ole (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 8,513,428.00 Danish Kroner

Managing ideas in innovation processes to strengthen innovation capability

Department of Management Engineering
Period: 01/03/2010 → 31/07/2012
Number of participants: 2
Phd Student: Jensen, Anna Rose Vagn (Intern)
Main Supervisor: Clausen, Christian (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD
Sustainability and Climate change
Department of Management Engineering
Period: 01/03/2010 → 15/08/2012
Number of participants: 2
Phd Student:
Ewens, Amalie Strømgård (Intern)
Main Supervisor:
Halsnæs, Kirsten (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

Innovation Consortium PROTEUS: PROduct/service-system Tools for Ensuring User-oriented Service
The Innovation Consortium, PROTEUS, is working to jointly develop new knowledge about how after-sales service can be effectively integrated into business development and industrial organisations, so as to become a source of revenue, rather than a cost to the company. The participants in PROTEUS are interested in understanding, through examples, how to effectively and systematically integrate service development into their product development and business creation processes. State-of-the-art: Current literature on Product/Service-Systems (PSS) includes examples of procedures for the integration of product and service features in product development, but these approaches do not consider a number of key areas for business, such as the commercial considerations, the strategic organisational issues, or the possibilities of collaboration across the value chain. PROTEUS is in a unique position to begin to address some of these issues on a whole branch.

Engineering Design and Product Development
Department of Management Engineering
Institute for Product Development
Copenhagen Business School
Danish Maritime Institute
Noreq Acta A/S
Emerson (Damcos)
Hempel A/S
Klinger
Lloyd’s Register ODS
MAN B&W Diesel A/S
Novenco Firefighting
Pres-Vac
YIT Corporation Ltd.

Aalborg Industries A/S
Period: 15/02/2010 → 15/08/2013
Number of participants: 8
Product/Service-Systems (PSS), Service Innovation, Maritime Industry
Acronym: PROTEUS
Project ID: 81095
Project participant:
Howard, Thomas J. (Intern)
Mougaard, Krestine (Intern)
Malthesen, Line Neugebauer (Intern)
Project Manager, organisational:
McAlone, Tim C. (Intern)
Bey, Niki (Intern)
Hsuan, Juliana (Ekstern)
Workspace Design II: Development of a new design practice in engineering consultancies and architectural firms

The objective is to develop and test methods and tools for a new dialogue oriented design practice in architectural firms and engineering consultancies aimed at involving users and occupational health and safety considerations in the early design stages.

Case studies are accomplished in collaboration with an architectural firm and an engineering consultancy. A single case study includes intervention in an ongoing engineering project. Other case studies include a systematic evaluation of completed design projects.

The project outcome includes a handbook for architects and engineers. The handbook is developed in an iterative prototyping process with professionals from architectural firms, engineering consultancies, and occupational health and safety consultants.

Department of Management Engineering
Production and Service Management
Teknologisk Institut
COWI Consultants A/S
Royal Danish Academy of Fine Arts
Period: 01/02/2010 → 30/06/2014
Number of participants: 2
Participatory Design, Workspace Design, Engineering design, Architectural design
Acronym: WSD II
Project participant:
Souza da Conceição, Carolina (Intern)
Project Manager, academic:
Broberg, Ole (Intern)

Relations
Activities:
Arbejdsmiljøforskningsfondens Årskonference
Arbejdsmiljøakademiet
Arbejdsmiljøkonferencen 2013
Project

Facilities Management and Added Value
Department of Management Engineering
Period: 01/02/2010 → 27/08/2013
Number of participants: 6
Phd Student:
Katchamart, Akarapong (Intern)
Supervisor:
Meel, Juriaan van (Ekstern)
Main Supervisor:
Jensen, Per Anker (Intern)
Examiner:
Jensen, Per Langaa (Intern)
Mobach, Mark (Ekstern)
Nenonen, Suvi (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Improved representation of renewable energy sources in integrated assessment modelling of energy and climate change policies

Department of Management Engineering
Period: 01/02/2010 → 03/12/2014
Number of participants: 6
Phd Student:
Balyk, Olexandr (Intern)
Supervisor:
Schröder, Sascha Thorsten (Intern)
Main Supervisor:
Karlsson, Kenneth Bernard (Intern)
Examiner:
Drews, Martin (Intern)
Espegren, Kari Aamodt (Ekstern)
Ravn, Hans V. (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

Optimization of container line networks with flexible demands

Department of Management Engineering
Period: 01/02/2010 → 22/11/2013
Number of participants: 5
Phd Student:
Plum, Christian Edinger Munk (Intern)
Supervisor:
Sigurd, Mikkel M. (Ekstern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Røpke, Stefan (Intern)
Fagerholt, Kjetil (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

The transfer of technologies for climate change mitigation and industrial development in developing countries

Department of Management Engineering
Period: 01/02/2010 → 20/09/2013
Number of participants: 6
Phd Student:
Hansen, Ulrich Elmer (Intern)
Supervisor:
Fold, Niels (Ekstern)
Main Supervisor:
Nygaard, Ivan (Intern)
Examiner:
Christensen, John M. (Intern)
Romijn, Hendrika Adriana (Ekstern)
Watson, Jim (Ekstern)

Financing sources
Ergonomisk Værdistrømsanalyse
Department of Management Engineering
Production and Service Management
Period: 04/01/2010 → 30/06/2014
Number of participants: 1
Acronym: ErgoVSM
Project participant:
Edwards, Kasper (Intern)

Relations
Activities:
NOVO-Symposium 2014
LEAN – arbejdsmiljø og relationel koordinering – hvordan arbejder vi med LEAN i dette spændingsfelt.
PhD faculty opponent at KTH / Royal Institute of Technology, Unit of Ergonomics (External organisation)
NOVO-Network (External organisation)
9th Novo symposium
KPI’er, performance og adfærd
Scandinavian lean experiences – Perspectives from a practitioner and a researcher: Keynote at Zürich University Hospital
How can servant leadership be useful for Nordic leaders?
Lean and servant leadership
Analyzing interventions – Are your conclusions out of context?
Arbejdsmiljø og lean
How is social capital linked to servant leadership in hospital settings?: Perception of social capital and servant leadership among Danish and Icelandic hospital staff
Få ergonomien med ind i arbejdsudviklingen
Integrating Work Environment Considerations Into Lean and Value Stream Mapping
Forskning i og på hospitaler

Bikeability - cities for zero-emission travel and public health
Department of Transport
Transport policy and behaviour
University of Copenhagen
University of Southern Denmark
Aalborg University
Danish Cancer Society
Delft University of Technology
Cyklistforbundet
Period: 01/01/2010 → 31/12/2013
Number of participants: 1
Acronym: Bikeability
Number of related Ph.D. students: 2
Project participant:
Nielsen, Thomas Alexander Sick ( Intern)

HEALTH CARE INNOVATION LAB: Development and test of simulation methods in a hospital outpatient clinic
The objective was to develop and test simulation methods and tools as a means in user driven innovation. The case was a hospital outpatient clinic that was going to move into a new building within 4-5 years. The research team planned and facilitated a number of design and simulation workshops with a user group including two medical doctors, two nurses, and
The results included a new cost-effective method of scenario-based tabletop simulation, which successfully promoted innovation and improvement of health care systems. In the case the user group succeeded in developing an innovative concept of the future outpatient clinic in terms of spatial layout, work organization, knowledge sharing, technology, and finance.

Department of Management Engineering
Production and Service Management
Grontmij A/S
Centre for Health Care Innovation, Capital Region
Danish Society for Patient Safety
Danish Institute for Medical Simulation
Period: 01/01/2010 → 01/03/2012
Number of participants: 4
Acronym: HIL
Project Manager, organizational:
Edwards, Kasper (Intern)
Phd Student:
Fronczek-Munter, Aneta (Intern)
Project Manager, academic:
Broberg, Ole (Intern)
Working partner:
Jensen, Per Anker (Intern)

Financing sources
Source: Forskningsprojekter - Erhvervsministeriet
Name of research programme: User Driven Innovation

Relations
Activities:
Arbejdsmiljøakademiet
Publications:
Scenario-based table top simulations
User-driven innovation of an outpatient department
Facilitating User Driven Innovation – A Study of Methods and Tools at Herlev Hospital

Development of genetically modified cereals adapted to the increased CO2 levels of the future
Department of Management Engineering
Quantitative Sustainability Assessment
Period: 01/01/2010 → 31/12/2013
Number of participants: 3
Acronym: DANCER
Number of related Ph.D. students: 1
Project participant:
Birkved, Morten (Intern)
Dijkman, Teunis Johannes (Intern)
Hauschild, Michael Zwicky (Intern)

Enabling and governing transitions to a low carbon society
Sustainable Transitions is a cross disciplinary research alliance comprising of research groups at the Technical University of Denmark, Aalborg University and the Business School Aarhus University in cooperation with research groups from universities in Eindhoven, Munich and Nottingham. The project operates on five core societal arenas for transition: Market regulation, Household consumption, Innovation dynamics, City structure and transport, and Legislation on biomaterials. Through historic analysis, case studies and action research the alliance will develop knowledge and methods that can support different actor's engagement in societal and technological transition processes reducing the use of fossil energy.
Enabling and governing transitions to a low carbon society: Sub project B: Challenging regimes at the level of everyday life in household practises

This project will explore the challenges and potentials in the meeting between regimes of the energy system and the normalised practices and visions formed at the level of households. A future sustainable energy system depends on the management of the very complex system of production and consumption across geographical, organisational, and time scales, and a successful integration of the large number of households in the system constitutes a crucial challenge. The diffusion of 5 technologies for intelligent management of the home holds an increasing technological potential for stronger coupling of the energy supply system and the energy consumption of households. These potentials have been present for quite some time without being realised. This frames a series of interlinked technical perspectives regarding peak loads, buffers storing, energy renovations and households as energy producers. Exploiting the potentials in different ways challenge visions of comfort as well as lived everyday practices and norms. Studies show that efforts to minimise energy consumption in dwellings typically are caught up by rising sizes of dwellings, levels of comfort, and numbers of electrical appliances (Quitzau and Røpke 2008). Hence there is a need to develop a more complex understanding of how domestic practises involving energy use presently change, and how governance strategies to implementation of energy saving measures may interact with these changes. Furthermore, it is important to highlight the interaction between energy saving initiatives from actors outside households and initiatives taken by the consumers themselves.
Kock, Alexander (Ekstern)
Leker, Jens (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

**Foresight analysis for world agricultural markets (2020)**
Department of Management Engineering
Technology and Innovation Management
National Technical University of Athens
VU University Medical Centre
Wageningen University & Research
Period: 01/01/2010 → 01/01/2013
Number of participants: 1
Acronym: AG2020
Project participant:
Borch, Kristian (Intern)

**Integrated Planning and Scheduling - A BIM-based Planning and Scheduling Process**
Department of Management Engineering
Period: 01/01/2010 → 24/04/2013
Number of participants: 6
PhD Student:
Büchmann-Slorup, Rolf (Intern)
Supervisor:
Vestergaard, Flemming (Intern)
Main Supervisor:
Andersson, Niclas (Intern)
Examiner:
Bonke, Sten (Intern)
Sacks, Rafael (Ekstern)
Wandahl, Søren (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

**Intelligent Road User Charging**
Transport policy and behaviour
Department of Management Engineering
Department of Transport
Traffic modelling and planning
Period: 01/01/2010 → 31/12/2015
Number of participants: 6
Acronym: IRUC
Project participant:
Hop, Jack Zagha (Intern)
Hjorth, Katrine (Intern)
Nielsen, Otto Anker (Intern)
Mabit, Stefan Eriksen (Intern)
Performing Temporary Spaces for Userdriven Innovation: subprojekt - Municipality platform
The project is a sub projekt of the TempoS Alliance in which the partners coming from DTU, DKDS (The Danish Design School) and CU (University of Copenhagen) have a common focus on user involvement in innovation. The research takes the outset in the identification and performance of temporary, provisional spaces where a variety of actors are assembled with the aim of fostering innovation through an engagement with existing and imagined practices. This part of the project takes the outset of the municipality as the platform for innovation and focuses on the user in the role of citizens. The project is developed in collaboration with the municipality of Copenhagen. A PhD projekt constitutes the main contribution. See Peter Munthe-Kaas. From the Tempos application: In contrast to most previous work on user-driven innovation our approach does not hinge on the existence of established communities of users, which designers can 'tap into' and interact with. Our research will explore situations where the staging of temporary spaces for innovation can lead to the creation of new practices and emerging artefacts through open-ended interaction. The alliance’s draws on actor-network-theory, practice theory, social learning and design research underpinning that innovation entails series of translations. The research is organised in three phases: 1. Drawing on the partner’s earlier research complemented by an overview and analysis of contemporary approaches to user-driven innovation the alliance's methodology will be refined. 2. The core of the research will be organised within four projects each emphasising a specific mode of inquiry and covering a number of different sites for user engagement. The projects study how users and innovations are co-constructed within temporary spaces and will produce a repertoire of methods that can help understanding and support co-creation. 3. The activities will be finalised with a synthesis and outline of how to stage and improve design education, design practice, and innovation management. The alliance collaborates with international researchers and facilitates exchange through publications, seminars, and international conferences. All partners are engaged in education and professional training opening for continued interaction with students and practitioners in design and innovation.

Pre-hospital Care and Intervention in the Urban Workspace
The project engages practitioner insight and actual practices of pre-hospital paramedical work in channeling these towards the design of repertoires for paramedic practice to support their work. The pre-hospital domain is influenced by conditions to which paramedics often have little influence. Paramedics are called to render their expertise and services accessible to potential victims or patients, and they work in what may be regarded as spaces, which have been pre-configured or organized for anything but the purpose of their reaching and attending to the patient at the site of emergency. While devices for intervention and treatment, including the ambulance and its auxiliary facilities are, to some extent designed to be conducive to managing the complexity and at times unanticipated conditions, the conditions, which paramedics must confront and conduct their work in, also call upon them to draw on their practical experience or improvisation. Ethnographic work of pre-hospital intervention practices can yield insight into the complex skills, these paramedics evoke in their knowledge and work practices, engaging with the urban setting (public spaces, private households) as their workspace. The multisite ethnography is drawn upon, to allow for insightful situations to shed light on how paramedics evoke their skills in the light of limitations that the different settings of practice in the urban space places on their work. The issues raised through the field work will be generated into a platform for action research, engaging selected practitioners in a focused exchange of ideas about conceptualisation and renewal of practice.

Innovation and Sustainability
**The 18th International Conference on Engineering Design, ICED11: Impacting Society Through Engineering Design**

ICED11 Theme: Impacting Society Through Engineering Design Design has a central role in bringing engineering and technology to practical use. We have chosen, therefore, that ICED11 will focus on balancing the societal impact of engineering design. Message from the Chair: On welcoming you to the eighteenth International Conference on Engineering Design, ICED11, it can safely be stated that engineering design research is firmly established as a strong research discipline. As design researchers, design practice is our research object and industry companies are our research laboratories. Based on our observations, discussions and participation in design activities, we gather knowledge and insights and crystallise these into both academic models and practical methods. Our customers are students, training to be the product developers and innovators of the future, and industrialists, engaging with us to get insight into tools and methods, which fit to their practices and empower them to meet the challenges of global competition. The theme we have chosen for ICED11 is Impacting Society through Engineering Design. Design has a central role in bringing engineering and technology to practical use. We are expecting that each of the papers and presentations at the conference will provide its own contribution to the ICED11 theme. We’re delighted to see the variety and the quality of contributions that our colleagues from the design research community have submitted to ICED11. In its 30 year history this is the first time that an ICED conference has returned to the same city, “Wonderful Copenhagen”. In the Danish official ‘Year of Design’ the city is the perfect conference location, hosting the highest quality design, ranging from industrial design, through stunning architecture, to a dynamic engineering design industry, which has extensively backed ICED11. We have taken great care to create a conference showing leading edge research into engineering design and product development practice and to provide a lively backdrop for knowledge exchange and research discussion. Our goals with ICED11 have been to place particular emphasis on industry participation, provocative and relevant keynote speeches, maximum time for debate and discussion, and space to go in to depth, via the SIG workshops. And all this with a Danish flavour, which we hope you find welcoming, fun and “hyggeelig”! Welcome to ICED11!

**Engineering Design and Product Development**

**Department of Management Engineering**

**Period:** 01/01/2010 → 31/12/2011
**Number of participants:** 1

**Project participant:**
Fosgerau, Mogens (Intern)

**Financing sources**

**Source:** Forsk. Andre offentlige og private - Nordiske
**Name of research programme:** Forsk. Andre offentlige og private - Nordiske
**Amount:** 50,000.00 Danish Kroner

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**Trip timing and scheduling preferences**

**Transport policy and behaviour**

**Department of Management Engineering**

**Period:** 01/01/2010 → 31/12/2011
**Number of participants:** 1

**Project participant:**
Fosgerau, Mogens (Intern)
Financing sources
Source: Public research council
Name of research programme: ERA-NET
Year of approval: 2010

Udvikling af optimeringsmodeller og løsningsmetoder til ruteplanlægning inden for trampfart
Department of Management Engineering
Period: 01/01/2010 → 19/12/2014
Number of participants: 5
Phd Student:
Vilhelmsen, Charlotte (Intern)
Main Supervisor:
Larsen, Jesper (Intern)
Examiner:
Pisinger, David (Intern)
Andersson, Henrik (Ekstern)
Oliveria, José Fernando da (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Udvikling af systemleverancer hos entreprenører
Department of Management Engineering
Period: 01/01/2010 → 22/11/2013
Number of participants: 6
Phd Student:
Kudsk, Anders (Intern)
Supervisor:
Thuesen, Christian (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Jacobsen, Peter (Intern)
Sunnersjö, Staffan C. (Ekstern)
Vibæk, Kasper Sánchez (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Vand i byer: Klimatilpasning og Innovation
Department of Management Engineering
Period: 01/01/2010 → 31/12/2014
Number of participants: 3
Acronym: VIB
Project ID: 80125
Project participant:
Elle, Morten (Intern)
Alsbiørn, Lene (Intern)
Project Manager, organisational:
Hoffmann, Birgitte (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 3,500,000.00 Danish Kroner
Project

**LC-IMPACT: Development and application of environmental Life Cycle Impact assessment Methods for imProved sustAinability Characterisation of Technologies**
Department of Management Engineering
Quantitative Sustainability Assessment
Radboud University Nijmegen
Swiss Federal Institute of Technology
Swedish Institute for Food and Biotechnology
PRé Consultants B.V.
International Institute for Applied Systems Analysis
Unilever
University of Suttgart
Quantis
Leiden University
European Commission - Joint Research Center
Institute of Agri-food Research and Technology
University of Bayreuth
Period: 01/12/2009 → 31/05/2013
Number of participants: 6
LCA
Acronym: LC-IMPACT
Project participant:
Hauschild, Michael Zwicky (Intern)
Rosenbaum, Ralph K. (Intern)
Larsen, Henrik Fred (Intern)
Fantke, Peter (Intern)
Owsianiak, Mikolaj (Intern)
Cosme, Nuno Miguel Dias (Intern)

**Relations**
Parent project:
Development and application of environmental Life Cycle Impact assessment Methods for improved sustAinability Characterisation of Technologies
Project

**Development and application of environmental Life Cycle Impact assessment Methods for improved sustAinability Characterisation of Technologies**
Department of Management Engineering
Quantitative Sustainability Assessment
Period: 01/12/2009 → 31/05/2013
Number of participants: 1
Acronym: LC-IMPACT
Number of related Ph.D. students: 1
Project Manager, organisational:
Rosenbaum, Ralph K. (Intern)

**Relations**
Activities:
LC-IMPACT: Outcomes work package 2: toxicity
Publications:
- Addressing Geographic Variability in the Comparative Toxicity Potential of Copper and Nickel in Soils
- Land use impacts on biodiversity in LCA: proposal of characterization factors based on functional diversity

**Management of Integrated Urban Water Systems**

Department of Management Engineering  
Period: 15/11/2009 → 31/07/2012  
Number of participants: 4  
Phd Student: Fratini, Chiara (Intern)  
Supervisor: Jensen, Marina Bergen (Ekstern)  
Mikkelsen, Peter Steen (Intern)  
Main Supervisor: Elle, Morten (Intern)

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Institut stipendie (DTU) Samf.  
Project: PhD

**Sustainable Disruption Management**

Department of Management Engineering  
Period: 01/11/2009 → 04/04/2013  
Number of participants: 7  
Phd Student: Vaaben, Bo Valdemar (Intern)  
Supervisor: Altus, Stephen (Ekstern)  
Hansen, Jesper (Intern)  
Main Supervisor: Larsen, Jesper (Intern)  
Examiner: Larsen, Allan (Intern)  
Cohn, Amy E. M. (Ekstern)  
Granberg, Tobias A. (Ekstern)

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: ErhvervsPhD-ordningen VTU  
Project: PhD

**Centre for regional change in the Earth system**

In taking an interdisciplinary approach, the overall objective of CRES is to extend knowledge of and reduce the uncertainties surrounding regional climate change and its impacts and thereby support future climate change adaptation and mitigation policies.

Department of Management Engineering  
Systems Analysis  
DTU Climate Centre

Energy Systems Analysis  
Period: 01/10/2009 → 01/10/2014  
Number of participants: 4  
climatic changes, climate change adaptation  
Acronym: CRES  
Project participant:
PhD Scholarship in Liner Service Network Design
Department of Management Engineering
Period: 01/10/2009 → 31/01/2013
Number of participants: 5
Phd Student:
Brouer, Berit Dangaard (Intern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Røpke, Stefan (Intern)
Christiansen, Marielle (Ekstern)
Salazar González, Juan José (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Campaign Planning within the Pharmaceutical Industry
Department of Management Engineering
Period: 01/09/2009 → 03/11/2014
Number of participants: 4
Phd Student:
Oddsdottir, Thordis Anna (Intern)
Supervisor:
Akkerman, Renzo (Intern)
Grunow, Martin (Intern)
Main Supervisor:
Jacobsen, Peter (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Formation of Life Cycle Inventory (LCI) Database for Crude Palm Oil Production and Palm Oil Based Bio-diesel Refining in Malaysia
Department of Management Engineering
Period: 01/09/2009 → 24/04/2013
Number of participants: 7
Phd Student:
Hansen, Sune Balle (Intern)
Supervisor:
Hauschild, Michael Zwicky (Intern)
Wangel, Arme (Intern)
Main Supervisor:
Olsen, Stig Irving (Intern)
Examiner:
Birkved, Morten (Intern)
Bruun, Sanders (Ekstern)
Finkbeiner, Matthias (Ekstern)
**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

**Improved Capacity in Intermodal Freight Transport**
Department of Transport
Period: 01/09/2009 → 04/04/2013
Number of participants: 6
Phd Student:
Abate, Megersa Abera (Intern)
Supervisor:
Cherchi, Elisabetta (Intern)
Schjerning, Bertel (Ekstern)
Main Supervisor:
Kveiborg, Ole (Intern)
Examiner:
Fosgerau, Mogens (Intern)
Jong, Gerard C. de (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

**Integration af avindkraft (Integration of Wind power)**
Department of Management Engineering
Period: 01/09/2009 → 27/08/2013
Number of participants: 8
Phd Student:
Hedegaard, Karsten (Intern)
Supervisor:
Detlevsen, Nina (Ekstern)
Meibom, Peter (Intern)
Münster, Marie (Intern)
Main Supervisor:
Morthorst, Poul Erik (Intern)
Examiner:
Klinge Jacobsen, Henrik (Intern)
Ahlgren, Erik (Intern)
Østergaard, Poul Alberg (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

**Integrefte innovation inden for tekstile materiale**
Department of Management Engineering
Period: 01/09/2009 → 21/02/2014
Number of participants: 6
Phd Student:
Wærsted, Elisabeth Heimdal (Intern)
Supervisor:
Brandt, Eva (Intern)
Main Supervisor:
Lenau, Torben Anker (Intern)
Examiner:
Maier, Anja (Intern)
Riisberg, Vibeke (Ekstern)
Ullmark, Peter (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

New Product Start Up in Pharmaceutical Production
Department of Management Engineering
Period: 01/09/2009 → 21/02/2014
Number of participants: 8
Phd Student:
Hansen, Klaus Reinholdt Nyhuus (Intern)
Supervisor:
Akkerman, Renzo (Intern)
Gani, Rafiqul (Intern)
Grunow, Martin (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Jacobsen, Peter (Intern)
Jósef, Váncza (Ekstern)
Olhager, Jan Erik (Ekstern)

Optimal Policies for Transport in Combination
The overall objective of the OPTIC project is to help identify in advance possible adverse effects of transport policy measures taken in isolation, and to develop methodologies for the design and implementation of optimal combinations of policy measures which reduce adverse effects and/or provide positive synergies.

Transport Economics
Department of Transport
Period: 01/09/2009 → 31/08/2011
Number of participants: 2
Acronym: OPTIC
Project participant:
Gudmundsson, Henrik (Intern)
Sørensen, Claus Hedegaard (Intern)

Electricity Market Design for Accommodation of Renewable Energy from Multinational Offshore Grids
Department of Management Engineering
Period: 01/08/2009 → 31/01/2013
Number of participants: 7
Phd Student:
Schröder, Sascha Thorsten (Intern)
A Guidebook for Sustainability Performance Measurement for Transportation Agencies

This guidebook provides state departments of transportation (DOTs) and other transportation agencies with a practical and easy-to-use approach to identify and apply sustainability-related performance measures, some number of which may already be integrated into agency business practices, to produce a new lens through which decision makers can view their agency’s performance. It describes the underlying principles of sustainability as it relates to transportation, possible goals that can be used to address those principles, and performance measures that can be used to address those goals. Aspects of sustainability-related performance measures, including data sources and examples of use, are discussed. A reference compendium of performance measures has also been provided. This guidebook should be of immediate use to those who have mastered the basics of performance measurement and who are familiar with their own agencies’ performance measurement program, but who are challenged with providing useful information to agency leadership on how effectively their organization is meeting or can meet sustainability goals. Examples from DOTs, private industry, and Europe illustrate how sustainability can be successfully added to an agency’s extant performance measurement system.

Transport Economics
Department of Transport
Transportation Research Board, TRB
Period: 09/07/2009 → 08/07/2011
Number of participants: 1
Acronym: NCHRP Report 708
Project ID: NCHRP 08-74
Project participant:
Gudmundsson, Henrik (Intern)
Documents:
nchrp_rpt_708.pdf

Indikatorer på det fejlfrie byggeri
Department of Management Engineering
Planning and Management of the Built Environment
Department of Informatics and Mathematical Modeling
Period: 01/07/2009 → 31/12/2012
Number of participants: 3
Project participant:
Jørgensen, Kirsten (Intern)
Schultz, Casper Siebken (Intern)
Bonke, Sten (Intern)

A study on how to solve Integrated Routing and Planning Problems
Department of Management Engineering
Period: 01/07/2009 → 28/09/2011
Number of participants: 5
Phd Student: Jepsen, Mads Kehlet (Intern)
Main Supervisor: Pisinger, David (Intern)
Examiner: Stidsen, Thomas Jacob Riis (Intern)
Lübbecke, Marco (Ekstern)
Salazar González, Juan José (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Indikatorer på det fejlfrie byggeri / Indicators of the Construction Excellence
Department of Management Engineering
Period: 01/07/2009 → 27/05/2013
Number of participants: 7
Phd Student: Rasmussen, Grane Mikael Gregaard (Intern)
Supervisor: Bonke, Sten (Intern)
Gottlieb, Stefan Christoffer (Intern)
Main Supervisor: Jørgensen, Kirsten (Intern)
Examiner: Jensen, Per Langaa (Intern)
Harty, Chris (Ekstern)
THOMASSEN, MIKKEL ANDREAS (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Robust long-term production planning
Department of Management Engineering
Period: 01/07/2009 → 29/06/2011
Number of participants: 6
Phd Student: Muller, Laurent Flindt (Intern)
Supervisor: Zachariasen, Martin (Ekstern)
Main Supervisor: Pisinger, David (Ekstern)
Examiner: Larsen, Jesper (Ekstern)
Demeulemeester, Erik (Ekstern)
Kolisch, Rainer (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

The Transport Innovation Network (TINV) is a national, cross disciplinary network aimed at the Danish Transport sector.
The primary objectives of TINV are to create synergy, encourage match-making and generate research and development projects between stakeholders in the transport sector and research- and educational institutions, as well as related sectors
such as energy and infrastructure. Denmark’s competitive position depends on the technological leadership of the transport sector. Accordingly, it is paramount for the Danish transport sector to be able to draw on the latest technology knowledge and research. Through a number of sub-activities, TINV works to gather the different players across the transport scene with the aim of creating synergy, identifying the need for new technologies and initiating projects between our members to ensure development and implementation of these. The Danish shipbuilding industry has traditionally focused on delivering products to their customers, based on the longevity and high technical/functional qualities of their physical artefacts. But as with most industries, the continuing market globalisation in the shipbuilding industry both opens opportunities, in terms of a rising number of potential customers and represents threats, due to the growing number of competitors worldwide. Maritime component manufacturers are experiencing a growing demand from customers with respect to after-sales service, and they also see a great business opportunity in becoming more systematic about their integrated product/service development activities.

Engineering Design and Product Development

Department of Management Engineering
Period: 01/07/2009 → 31/12/2010
Number of participants: 2
Product/Service-Systems (PSS), Service Innovation, Maritime Industry, Transport Innovation
Acronym: TINV
Project ID: 81031
Project participant:
Mougaard, Krestine (Intern)
Project Manager, organisational:
McAloone, Tim C. (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 736,762.00 Danish Kroner

ACP-MEAs - Capacity Building on CDM in Africa, the Caribbean and the Pacific
The project is to enable conditions for the development of the CDM and increase the participation of these regions in the CDM.

www.uneprisoe.org

The project has entered in its third year of implementation.

Department of Management Engineering

UNEP Risø Centre
Period: 01/06/2009 → 31/03/2014
Number of participants: 1
Acronym: ACP-MEAs-CDM
Project participant:
Zaballa Romero, Mauricio Ernesto (Intern)

Life Cycle Impact Assessment for waste management systems

Department of Management Engineering
Period: 01/06/2009 → 31/12/2010
Number of participants: 2
Phd Student:
Wolf, Patricia (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet
Project: PhD
One Display for a Cockpit Interactive Solution

European FP7 project aimed at developing a single display cockpit by employing state of the art technologies.

The ODICIS project aims at developing a single display cockpit associated with adequate means of interaction. The concept of use of such a display will be investigated and followed by a Human Machine Interface development. This addresses three current major aeronautics needs: the system architecture flexibility, the useful surface optimisation and the information continuity. Therefore the project will improve the operational safety and efficiency while reducing the aircraft development cost.

The first objective is to prove the technical feasibility of an avionics large seamless display, which can possibly be curved. This involves optical but also graphic generation challenges. The design of the display must take into account as much as possible user wishes and aircraft possibilities.

Once the display is available, the proper means of interaction must be defined and implemented. At this point, a complete technological mock-up of a single display cockpit will be available.

Meanwhile, the concepts of use, that stimulated the idea of a single display cockpit, will be reviewed, deepened and tested on the mock-up. Human factors evaluations will seek to ascertain the safety and efficiency gains produced by this novel cockpit concept based on use of a single display.

The ODICIS consortium comprises 9 partners from 7 EU member states. It includes 4 large companies, 1 SME, 1 research centre and 3 universities. Together they provide the range of key skills, knowledge and experience required to define, develop, implement and exploit the results of the ODICIS project.
Source: EU research programme (public)
Name of research programme: FP7
Year of approval: 2009

Relations
Publications:
Direct tactile manipulation of the flight plan in a modern aircraft cockpit
ODICIS (One Display for a Cockpit Interactive Solution) - Final public progress report
A Deported View Concept for Touch Interaction

Press / Media items:
Ingeniøren: DTU tester avanceret cockpit-design i Tivoli-rutsjebane
DR1: Ny teknik: Forskning i rutsjebanen
Videnskab.dk: Rutsjebanetur bliver til moderne flycockpit
Dynamo: Fremtidens cockpit

Project

Documentation of a product range for product configuration
Department of Management Engineering
Period: 01/05/2009 → 31/07/2010
Number of participants: 3
Phd Student:
Kierkegaard, Allan Lester (Intern)
Supervisor:
Mortensen, Niels Henrik (Intern)
Main Supervisor:
Hvam, Lars (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Eksternt finansieret virksomhed
Project: PhD

Drivkæfter og barrierer bag unges transportbehov
Department of Transport
Period: 01/05/2009 → 28/04/2014
Number of participants: 6
Phd Student:
Sigurardottir, Sigrun Birna (Intern)
Supervisor:
Teasdale, Thomas William (Ekstern)
Main Supervisor:
Møller, Mette (Intern)
 Examiner:
Nielsen, Thomas Alexander Sick (Intern)
Anable, Jillian (Ekstern)
Hjorthol, Randi J. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Integration af arbejdsmiljøviden i designprocesser
Department of Management Engineering
Period: 01/05/2009 → 21/02/2014
Number of participants: 6
Phd Student:
Hall-Andersen, Lene Bjerg (Intern)
Roadmapping and strategy in science, technology and innovation

Department of Management Engineering
Period: 01/05/2009 → 04/04/2013
Number of participants: 7
Phd Student:
Ricard, Lykke Margot (Intern)
Supervisor:
Andersen, Maj Munch (Intern)
Rasmussen, Birgitte (Intern)
Main Supervisor:
Andersen, Per Dannemand (Intern)
Examiner:
Rasmussen, Lauge Baungaard (Intern)
Mønsted, Mette (Ekstern)
Phaal, Robert (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Den nye verdsettingsundersøkelsen : (Norwegian valuation study)

Department of Transport
Institute of Transport Economics
Period: 15/04/2009 → 28/02/2010
Number of participants: 8
Project participant:
Ramjerdi, Farideh (Ekstern)
Veisten, Knut (Ekstern)
Minken, Harald (Ekstern)
Elvik, Rune (Ekstern)
Killi, Marit (Ekstern)
Flügel, Stefan (Ekstern)
Hjorth, Katrine (Intern)
Project Manager, organisational:
Samstad, Hanne (Ekstern)

Financing sources
Source: Forsk. Andre offentlige og private - Nordiske
Name of research programme: Forsk. Andre offentlige og private - Nordiske
Amount: 98,000.00 Danish Kroner
Project
Global Comparative Study CIFOR

Through comparative studies of the implementation of REDD+ around the world, the GCS REDD+ project takes stock of international, national and subnational REDD+ experiences to identify challenges and opportunities in designing and implementing effective, efficient, and equitable REDD+ policies and projects. Riyong's contribution was 340HH dataset on REDD+ in the Brazilian Amazon.

Department of Management Engineering

UNEP DTU Partnership
Period: 01/04/2009 → 01/01/2017
Number of participants: 1
Project participant:
Bakkegaard, Riyong Kim (Intern)

Project

Styrkelse af dansk byggeris innovationssystem

Department of Management Engineering

Production and Service Management

Aarhus University
Teknologisk Institut
Period: 01/04/2009 → 28/02/2010
Number of participants: 1
Acronym: Byggeriets Innovationssystem
Project participant:
Thuesen, Christian (Intern)

Relations
Related projects:
Innovation network for energy efficient and sustainable construction
Publications:
Construction sector development: frames and governance responses
Styrkelse af dansk byggeris innovationssystem
Strategy and business development practices in Danish construction industry SMEs.
Hvordan arbejder virksomheden i byggebranchen med forretningsudvikling?

Project

The EcoMobility project

The Øresund EcoMobility project’s purpose is to promote sustainable and climate friendly transport solutions. Throughout the Øresund region, there is profound knowledge and many competencies on the subject "climate friendly transportation". Øresund EcoMobility Knowledge & Innovation Centre strives to gather these competencies in a unified network of universities, industries and regional authorities. This unique network of regional competencies, will consist of over 40 experts within areas such as: cleantech, environmental science, infrastructure, city and transport planning, logistics and supply chain management. The project was built on three stages:

1. Cross-science Triple-Helix Thematic Knowledge Exchange Networks which gather knowledge on climate friendly transportation of goods and people.
2. Øresund EcoMobility Knowledge & Innovation Centre, which carries out knowledge dissemination, innovation and competence building.
3. Øresund Competence Building and Knowledge Sharing activities, such as publications, websites, workshops, conferences and courses for professionals, university students etc.

The DTU team developed the EcoMobility model as part of its project contribution.

Department of Transport
Transport policy and behaviour
Decision Modelling
Lund University
This study is aimed at analysing the likely route and extent of human exposure to carbon nanotubes (CNTs) via inhalation for a set of representative CNT-containing products in a lifecycle perspective. The study has been conducted by the Safety of nanomaterial Interdisciplinary Research Centre (SnIRC), led for this study by the Food and Environment Research Agency, with participation of other Academic and Industrial Experts. As part of the study, a review of all available CNT-containing products was carried out, and a representative subset of the products was identified for exposure analysis. The three CNT-containing products selected for the study included lithium-ion batteries, epoxy adhesive resins, and textiles. The study assessed the suitability of current lifecycle assessment (LCA) protocols for assessing inhalation exposure from CNT and other nano-products. The relevance and adequacy of the relevant ISO protocols was assessed in relation to nanotechnology products (especially CNT-containing products), and any inadequacies have been highlighted. The study also analysed the possibility of exposure to CNTs arising via inhalation during all stages of the life cycles of the selected study products. The findings of the study indicate that: 6a)LCA is not a tool for exposure assessment. On the contrary, exposure assessments can provide information to LCA that is relevant for impact assessment of CNT releases. LCA is, however, useful in identifying the stages in the lifecycle during which exposure may be relevant. 6b)There is an almost complete lack of data to enable both a full-scale LCA, or a quantitative exposure assessment. Due to unavailability of the required data, a simplified LCA approach is adopted in this study, focusing on the potential inhalation exposure during the lifecycle of the selected CNT-containing products. Also, the exposure assessment is limited to qualitative analysis because of the lack of data necessary for a quantitative assessment. 7)Both LCA and exposure analysis have shown that the material synthesis stage (both for CNT materials, and CNT-containing products) is prone to giving rise to inhalation exposure to CNTs. However, the few studies carried out so far have generally shown that nanoparticle emissions during synthesis can be effectively controlled through appropriate engineering measures. Significant inhalation exposure to CNT material at this stage should be preventable provided such processes are carried out under appropriate emission control and waste management procedures. The main emphasis from the exposure point of view, therefore, needs to be on other stages/ processes in the lifecycle of products, where any sophisticated emission control measures are not likely to exist, e.g. during handling, transportation, accidental release, and use and disposal of the relevant materials and products. 8)Using the currently available level of scientific evidence, those stages in the lifecycle of each study product have been highlighted where inhalation exposure to CNT is possible. 9)In brief, the study has indicated that during post-production lifecycle stages: 9a)CNT-containing batteries will carry a risk of inhalation exposure during use only if the batteries are physically cut open. The main likelihood of exposure exists during accidental release (e.g. fire), and during recycling and disposal stages. People likely to be exposed will be those working at the recycling or waste disposal premises, or in the immediate vicinity. 9b)The use of the textiles, to which CNTs are added on the outer surface of the yarn in a post-production coating process, is likely to pose a greater potential for exposure to CNT than any of the other processes studied. This is the only case where a significant consumer exposure during use stage seems plausible. Other lifecycle stages where there is a likelihood of exposure include recycling (shredding and milling of worn-out textiles), and disposal through incomplete incineration. Thus those likely to be exposed would include those working at the recycling or waste disposal premises, or in the immediate vicinity. 9c)CNT-containing epoxy adhesive resins may carry a risk of inhalation exposure during use only if there are conditions that lead to formation of aerosols. The main likelihood of exposure will be during disposal through incomplete incineration. It is also of note that epoxy resins generally have a relatively short shelf life (9 months in the case of the study product). There is therefore a need to develop a mechanism for appropriate disposal of the unused (unhardened, liquid) epoxy resin for appropriate disposal. 10)Common to all the three product types studied is the need for mechanisms for appropriate end-of-life treatments (e.g. separate collection of (spent) CNT-containing batteries, recycling of CNT-containing batteries and textiles under controlled conditions, and processes that ensure complete incineration of CNT in the disposed of products). 11)Urgent research is needed to address the almost total lack of exposure data for CNT-containing consumer products, and the appropriateness of end-of-life treatments. The findings of the research would also enable the manufacturers to...
develop safer products through better designs that are aimed at minimising the likelihood of exposure to CNTs (and/or other nanomaterials) during subsequent stages in the lifecycle.

Quantitative Sustainability Assessment
Department of Management Engineering
The Food and Environment Research Agency
Period: 01/04/2009 → 30/09/2009
Number of participants: 2
Project ID: 81073
Contact person: Chaudry, Qasim (Ekstern)
Project Manager, organisational: Olsen, Stig Irving (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 59,000.00 Danish Kroner

Decision support for climate change adaptation - applications for coastal regions
Department of Management Engineering
Period: 01/03/2009 → 26/05/2014
Number of participants: 6
Phd Student: Appelquist, Lars Rosendahl (Intern)
Supervisor: Aagaard, Troels (Ekstern)
Main Supervisor: Halsnæs, Kirsten (Intern)
Examiner: Olhoff, Anne (Intern)
Garg, Amit (Ekstern)
Rasmussen, Kjeld (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

Ikke-robust dekomponering og løsning af hårde korteste-vej problemer
Department of Management Engineering
Period: 01/03/2009 → 02/02/2011
Number of participants: 5
Phd Student: Petersen, Bjørn (Intern)
Main Supervisor: Pisinger, David (Intern)
Examiner: Larsen, Jesper (Ekstern)
Irnich, Stefan (Ekstern)
Salani, Matteo (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD
Malawi and Botswana - African Caribbean and Pacific (ACP) Multilateral Environmental Agreements (ACP MEA), CDM component

This project is part of the European Commission Programme for Capacity Building related to Multilateral Environmental Agreements (MEAs) in African, Caribbean and Pacific (ACP) countries. The UNEP Risø Centre (URC), based in Denmark, is the project implementing agency for the Clean Development Mechanism (CDM) sub-component. The project, hereafter referred to as EU-ACP-MEA, will be implemented over a three year period, starting on 1 February 2010 and ending on 31 January 2013.

Following expressions of national interest the CDM sub-component will be implemented in seven African countries: Angola, Botswana, Ivory Coast, Malawi, Nigeria, Rwanda and São Tomé and Príncipe, three Caribbean Island States: Belize, Cuba, Trinidad and Tobago and the following Pacific countries: Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu and Timor Leste.

Department of Management Engineering

UNEP Risø Centre
Period: 28/02/2009 → 28/02/2014
Number of participants: 3
Acronym: ACP MEA
Project participant:
Olsen, Karen Holm (Intern)
Ngara, Todd (Intern)
Project Manager, academic:
Hinostroza, Miriam L. (Intern)

Airport Ground Staff Scheduling

Department of Management Engineering
Period: 01/02/2009 → 21/12/2010
Number of participants: 6
Phd Student:
Clausen, Tommy (Intern)
Supervisor:
Jensen, Janus Sejr (Ekstern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Larsen, Jesper (Ekstern)
Gustafsson, Tomas (Ekstern)
da Costa Oliveira, José Fernando (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Organisering af almen praksis : Social kapital og kvalitet

Department of Management Engineering

University of Southern Denmark
Period: 01/02/2009 → 31/01/2012
Number of participants: 2
Project ID: 95-80967
Contact person:
Kragstrup, Jakob (Ekstern)
Project Manager, organisational:
Ladeby, Klaes Rohde (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 683,315.00 Danish Kroner
Project
Scheduling of network traffic for Grid purposes

Department of Management Engineering
Period: 01/02/2009 → 30/06/2010
Number of participants: 7
Phd Student:
Gamst, Mette (Intern)
Supervisor:
Raun, Niels (Ekstern)
Vinter, Brian (Ekstern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Stidsen, Thomas Jacob Riis (Intern)
Jaumard, Brigitte (Ekstern)
Lübbecke, Marco (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Drivers and limits for transport - possible contributions to climate change

Department of Transport
Transport policy and behaviour
Traffic modelling and planning
University of Copenhagen
Anvendt KommunalForskning
University of Oxford
Vrije Universiteit Amsterdam
University of Arizona

University of Leeds
Period: 01/01/2009 → 31/12/2013
Number of participants: 15
Acronym: DandL
Number of related Ph.D. students: 4
Project participant:
Nielsen, Thomas Alexander Sick (Intern)
Christensen, Linda (Intern)
Siren, Anu Kristiina (Intern)
Haustein, Sonja (Intern)
Meller, Mette (Intern)
Meza, Maria Josefin Figueroa (Intern)
Gudmundsson, Henrik (Intern)
Mulalic, Ismir (Intern)
Madsen, Edith (Intern)
Knudsen, Mette Aagaard (Intern)
Abate, Megersa Aberapa (Intern)
Sigurdardottir, Sigrun Birna (Intern)
Pilegaard, Ninette (Intern)
Kaplan, Sigal (Intern)
Project Coordinator:
Kristensen, Niels Buus (Intern)
Danish participation in the project 'Analysis of potentials and costs of storage of CO2 in the Utsira aquifer in the North Sea - StorageUtsira'

The project is aimed at funding the Danish participation in the project "Analysis of potentials and costs of storage of CO2 in the Utsira aquifer in the North Sea - StorageUtsira" within FENCO-ERA, which is an EU network for national R&D activities in 13 countries in the field of fossil energy conversion and CO2 capture and storage.

Department of Management Engineering
Institutt for Energiteknikk
University College London
Utrecht University
University of Stuttgart

Period: 01/01/2009 → 31/12/2009
Number of participants: 1
Carbon Captura and Storage, MARKAL/TIMES
Acronym: StorageUtsira
Project ID: 10266 (ForskEL)
Project participant:
Grohnheit, Poul Erik (Intern)
Documents:
Final Report
Project

Demand for CEVs : Potentiael de marché VPE

Traffic Modelling

Department of Transport
Institut national de recherche sur les transports et leur sécurité

Period: 01/01/2009 → 31/10/2012
Number of participants: 1
Acronym: CEV's
Project participant:
Mabit, Stefan Eriksen (Intern)
Documents:
Project

Design af systemer til computerstøttet samarbejde i sundhedssektoren: Udvikling af metoder og teknikker til idéudvikling i IT-design

Department of Management Engineering

Period: 01/01/2009 → 31/12/2009
Number of participants: 2
Phd Student:
Mønsted, Troels Sune (Intern)
Main Supervisor:
Bansler, Jørgen P. (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Environmental Sustainability Assessment of Biodiesel Production

Department of Management Engineering

Period: 01/01/2009 → 20/09/2012
Number of participants: 5
Phd Student:
Herrmann, Ivan Tengbjerg (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Olsen, Stig Irving (Intern)
Mortensen, Jørgen Birk (Ekstern)
Rydberg, Tomas Vilhelm (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Fremme af klimatiltag i det byggede miljø
Department of Management Engineering
Period: 01/01/2009 → 01/01/2011
Number of participants: 3
Project ID: 80972
Project participant:
Elle, Morten (Intern)
Alsbjørn, Lene (Intern)
Project Manager, organisational:
Quitzau, Maj-Britt (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 1,000,000.00 Danish Kroner

Optimizing Transportation, Planning, and Scheduling Problems using Decomposition Algorithms
Operations Research
Department of Management Engineering
Period: 01/01/2009 → 31/12/2010
Number of participants: 1
Project ID: 80951
Contact person:
Spoorendonk, Simon (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 1,500,000.00 Danish Kroner

POWRS (prevention of work-related stress) : Forebyggelse af arbejdsrelateret stress
Department of Management Engineering
Period: 01/01/2009 → 01/01/2010
Number of participants: 2
Project participant:
Ipsen, Christine (Intern)
Project Manager, organisational:
Andersen, Vibeke (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 350,000.00 Danish Kroner
PROspective SUstainability Assessment of TEChnologies. A European project to develop and standardize methodology

**PROspective SUstainability Assessment of TEChnologies (PROSUITE; WP4 Social assessment)** A European project to develop and standardize methodology 2009-2011.

**Department of Management Engineering**

**Quantitative Sustainability Assessment**
Period: 01/01/2009 → 31/12/2011
Number of participants: 1
Acronym: PROSUITE
Project participant:
Wangel, Arne (Intern)

**Relations**
Publications:
Identifying best existing practice for characterization modeling in life cycle impact assessment

Documents:
01-64_PROSUITE-HANDBOOK_update_FINAL_11dec2013

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**Understanding the knowledge requirements from the phases of the product lifecycle to support early phase decision making in complex engineering design processes**

**Department of Management Engineering**
Period: 01/01/2009 → 27/01/2014
Number of participants: 5
Phd Student:
Jensen, Ole Kjeldal (Intern)
Main Supervisor:
Ahmed-Kristensen, Saeema (Intern)
Examiner:
Andersen, Maj Munch (Intern)
Badke-Schaub, Petra (Ekstern)
Christensen, Bo T. (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

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**Bæredygtig Facilities Management / Sustainable Facilities Management**

**Department of Management Engineering**
Period: 01/12/2008 → 28/03/2012
Number of participants: 6
Phd Student:
Galamba, Kirsten Ramskov (Intern)
Supervisor:
Nielsen, Kurt Aagaard (Ekstern)
Main Supervisor:
Nielsen, Susanne Balslev (Intern)
Examiner:
Buch, Anders (Intern)
Blakstad, Siri Hunnes (Ekstern)
Sriskandarajah, Nadarajah (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Project: PhD
Microcellular nanocomposite for substitution of Balsa wood and PVC core material

Quantitative Sustainability Assessment

Department of Management Engineering
Period: 01/12/2008 → 30/06/2012
Number of participants: 1
Acronym: NanCore
Project ID: 80952
Project Manager, organisational:
Olsen, Stig Irving (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 1,000,000.00 Danish Kroner
Project

Magnetic Sorting and Ultrasound Sensor Technologies for Production of High Purity Secondary Polyolefins from Waste

Quantitative Sustainability Assessment

Department of Management Engineering
Period: 01/11/2008 → 01/12/2011
Number of participants: 1
Acronym: W2Plastic
Project ID: 80970
Project Manager, organisational:
Olsen, Stig Irving (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 1,800,000.00 Danish Kroner
Project

Arbejdsmiljøcertificering som tilsynsredskab og -strategi

Department of Management Engineering
Production and Service Management
Risk Research Group
Period: 20/10/2008 → 30/09/2010
Number of participants: 11
Project participant:
Jørgensen, Ulrik (Intern)
Jørgensen, Michael Søgaard (Intern)
Jørgensen, Kirsten (Intern)
Thorsen, Nils (Intern)
Karlsen, Jan Erik (Ekstern)
Lindee, Preben H. (Ekstern)
Lagerlöf, Elisabeth (Ekstern)
Snorradóttir, Ásta (Ekstern)
Hietanen-Kunwald, Petra (Ekstern)
Hirsbak, Stig (Ekstern)
Project Manager, academic:
Hendriksen, Kåre (Intern)
Documents:
101214 NMR Rapport Arbejdsmiljøcertificering
Project
Atmospheric Plasmas for Nanoscale Industrial Surface Processing
Department of Management Engineering
Production and Service Management
Risø National Laboratory for Sustainable Energy
Safety, Reliability and Human Factors
Systems Analysis Division
Safety, Reliability and Human Factors
Tampere University of Technology
Flemish Institute for Technological Research
VTT - Technical Research Centre of Finland
Period: 01/10/2008 → 31/03/2012
Number of participants: 2
Acronym: PlasmaNice
Number of related Ph.D. students: 0
Project participant:
Duijm, Nijs Jan (Intern)
Project Manager, academic:
Markert, Frank (Intern)
Project

Effektive løsningsmetoder til real-tids distributionssystemer
Department of Transport
Period: 01/10/2008 → 30/11/2009
Number of participants: 3
Phd Student:
Kristiansen, Helene Martine Overø (Intern)
Supervisor:
Røpke, Stefan (Intern)
Main Supervisor:
Larsen, Allan (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Socio-Economic and Energy Systems Analysis of Micro Fuel Cells (SEE-µFC)
Department of Management Engineering
Risø National Laboratory for Sustainable Energy
EDF R&D
Simbiente
Period: 01/10/2008 → 01/10/2010
Number of participants: 5
Brændselsceller, Individuel energiforsyning
Acronym: FC4Home
Project ID: 1200242
Project participant:
Münster, Marie (Intern)
Pade, Lise-Lotte (Intern)
Ropenus, Stephanie (Intern)
Schröder, Sascha Thorsten (Intern)
Project Manager, organisational:
Morthorst, Poul Erik (Intern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Energiteknologisk Udviklings- og Demonstrationsprogram (EUDP)
Amount: 290,000.00 Danish Kroner

Relations
Publications:
- Policy schemes, operational strategies and system integration of residential co-generation fuel cells
- Fuel cell based micro-combined heat and power under different policy frameworks - An economic analysis
- Analyses of models for promotion schemes and ownership arrangements
- Support schemes and ownership structures - the policy context for fuel cell based micro-combined heat and power
- Support schemes and ownership structures – The policy context for fuel cell-based micro-combined heat and power
- Support Schemes and Ownership Structures
- System analysis on operational strategy
- National Cases combining promotion scheme, ownership structure and operational strategy for Denmark, France and Portugal

Formative phases of technology specific innovation systems - regions' role in H2&FC development

Department of Management Engineering
Period: 15/09/2008 → 25/06/2012
Number of participants: 8
Phd Student:
- Tanner, Anne Nygaard (Intern)
Supervisor:
- Andersen, Per Dannemand (Intern)
- Borras, Susana (Ekstern)
- Borup, Mads (Intern)
Main Supervisor:
- Andersen, Maj Munch (Intern)
Examiner:
- Thuesen, Christian (Intern)
- Boschma, Ron (Ekstern)
- Winther, Lars (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Grønlands bygder - økonomi og udviklingsdynamik

Department of Management Engineering
Aalborg University
Period: 01/09/2008 → 30/06/2012
Number of participants: 1
Phd Student:
- Hendriksen, Kåre (Intern)

Beslutningsproblemer for energitransmissionsnetværk i et samfundsøkonomisk perspektiv

Department of Management Engineering
Period: 01/09/2008 → 22/02/2012
Number of participants: 5
Phd Student:
Living with poverty and climate change - a study on vulnerability and adaptation to climate-related shocks on household level

Department of Management Engineering
Period: 01/09/2008 → 24/08/2012
Number of participants: 5
PhD Student:
Jakobsen, Kristian Thor (Intern)
Main Supervisor:
Halsnæs, Kirsten (Intern)
Examiner:
Christensen, John M. (Intern)
Markandya, SLET (Anil) (Ekstern)
Mortensen, Jørgen Birk (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

OPP og indkøb af facilites management ydelser

Planning and Management of the Built Environment

Department of Management Engineering
Period: 01/09/2008 → 31/12/2012
Number of participants: 1
Project Manager, organisational:
Kristiansen, Kristian (Intern)

Financing sources
Source: Forsk. Private danske - Fonde
Name of research programme: Forsk. Private danske - Fonde
Amount: 1,000,000.00 Danish Kroner
Project

CPH Willingness to pay

Department of Transport
Incentive Partners

CPH Copenhagen Airports
Period: 01/08/2008 → 31/12/2008
Number of participants: 5
Project participant:
Mønsted, Casper (Ekstern)
Holm Jensen, Henrik (Ekstern)
Direct Vision Based Molten Pool Feature Extraction in Automated Arc Welding

Engineering Design and Product Development

Department of Management Engineering
Period: 01/08/2008 → 01/08/2011
Number of participants: 2
Project participant:
Liu, Jinchao (Intern)
Project Manager, organisational:
Fan, Zhun (Intern)

Financing sources
Source: Ph.d Central finansieret
Name of research programme: Ph.d Central finansieret
Amount: 2,054,000.00 Danish Kroner

Faciliteter for Kreative Miljøer : - forskningsprojekt i Center for Facilities Management

Department of Management Engineering
Period: 01/08/2008 → 31/12/2010
Number of participants: 1
Project Manager, organisational:
Hoffmann, Birgitte (Intern)

Financing sources
Source: Forsk. Private danske - Fonde
Name of research programme: Forsk. Private danske - Fonde
Amount: 1,395,455.00 Danish Kroner

Nano Test, networking project

Engineered and designed nanoparticles (NPs) may pose a potential risk to human health and to the environment. The availability of results from relevant and systematic cross-disciplinary research is poor. Physico-chemical characterization and quantification should be incorporated among other parameters. It is mandatory to gain systematic knowledge before we are able to assess risk to humans and to the environment. The main purpose of this networking project is to establish a forum to gain and share such knowledge. The division for Toxicology and Risk Assessment (div. T) has a more than thirty years tradition for toxicological advice and risk assessment based on own interdisciplinary research and is a national and international leader in these areas. The division of Food Chemistry (div. K) has expert knowledge about chemical analyses in biological materials and testing of migration from food contact materials. Recently acquired knowledge includes studies of metal microparticulates and elemental speciation in food and biological matrices. Internally in the National Food Institute, div. T and K have established a thriving network that includes complimenting scientific skills useful in the cross-disciplinary area of nano research. Div. T and K are establishing national and international networks, presently including Danish governmental institutions and universities, and private companies. For the time being a.o. The Danish Food Agency, Danish Environmental Protection Agency, Aalborg University, University of Illinois, Risø National Laboratory, and DHI - Water and Environment are taking part. DFVF also is a member of two national nanotechnology networks: NaNet and inANANO. This thriving network has initiated initiatives for research including physico-chemical characterization and quantification and in vitro testing and has planned in vivo investigations. We can offer collaboration with other institutions in EU countries or elsewhere.

National Food Institute
National Veterinary Institute
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC)
Risø National Laboratory for Sustainable Energy
Aalborg University
DHI Denmark
Danish Agriculture and Food Agency
Environmental Protection Agency
Period: 01/08/2008 → 30/07/2010
Number of participants: 8
Project participant:
Madsen, Charlotte Bernhard (Intern)
Larsen, Erik Huusfeldt (Intern)
Pedersen, Gitte Alsing (Intern)
Jensen, Gunde Egeskov (Intern)
Sørensen, Ilona Kryspin (Intern)
Petersen, Jens Højslev (Intern)
Binderup, Mona-Lise (Intern)
Project Manager, organisational:
Hadrup, Niels (Intern)

Supply chain modelling for professionally prepared meals
Department of Management Engineering
Period: 01/08/2008 → 31/01/2013
Number of participants: 6
Phd Student:
Wang, Yang (Intern)
Supervisor:
Grunow, Martin (Intern)
Main Supervisor:
Akkerman, Renzo (Intern)
Examiner:
Hauschild, Michael Zwicky (Intern)
Li, Dong (Ekstern)
Sonesson, Ulf (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Offentlig finansiering
Project: PhD

Direct vision based molten pool feature extraction in automated arc welding
Department of Management Engineering
Period: 01/07/2008 → 25/01/2012
Number of participants: 8
Phd Student:
Liu, Jinchao (Intern)
Supervisor:
Christensen, Kim Hardam (Intern)
Klæstrup Kristensen, Jens (Intern)
Olsen, Søren Ingvor (Ekstern)
Main Supervisor:
Fan, Zhun (Intern)
Environmental Care : City Toll Systems

The project assumed a Road Pricing scheme is to be implemented in a major city, and will then offer support as to which scheme will yield the most benefit to that particular city. (exemplified for Copenhagen). In short, the objective of this project is to construct a tool (hereafter referred to as 'the Tool'). This incorporates the development of a methodology which allows the comparison of economical and ecological effects of a road pricing scheme. The tool that can be used to evaluate a set of different Road Pricing schemes based on various parameters and then answer the following three questions: from a customer’s point of view: 1. What Road Pricing scheme will yield the best results for the city? 2. What are the effects of the Road Pricing schemes compared to a given situation (which could be the current situation? or a situation in future)? 3. What are the answers to the above two questions in a near future scenario? (2 to 5 years)? The Tool will answer the above three questions with KPI’s within the areas pollution, revenue and traffic. Pollution will primarily be measured by airborne pollutants (incl. CO2 and particulate matter). Revenue will be the income from road users’ payments to the Road Pricing scheme minus the cost of establishing and maintaining the scheme. Traffic will be primarily measured by average speed and congestion. A future scenario is defined by the input parameters. As such there is no limit as to how far into the future the tool can be used, but the results are of course dependent on the accuracy of the input. The Tool will initially be able to evaluate three different Road Pricing schemes: 1. Distance based Road Pricing where the pricing is a function of the distance driven within a zone. In this case the Road Pricing scheme is based on GPS in possible combination with a secondary technology for enforcement such as camera or RFID. 2. Fixed zone based Road Pricing where there is a fixed price for entering a zone. The technology here can be GPS, RFID, camera or another stationary technology. 3. Flexible zone based Road Pricing where the price for entering a zone is dependent on the time of day the zone is entered. Technology can be as in (2), but additional displays informing of the price might be needed. The baseline scenario that will be used when evaluating the above three Road Pricing schemes will be the KPI’s from running the Tool with a no pricing strategy. The results showed that a mixed base pricing (mixed by 1 and 2 above) provides the best results in terms of increased average speed and less congestion as well as in terms of reduction of CO2 emissions (4.5% reduction) and human health impacts in the inner city.

Quantitative Sustainability Assessment
Department of Management Engineering
Siemens Corporate Technology
Period: 30/06/2008 → 30/06/2009
Number of participants: 2
Project ID: 80928
Contact person:
Walachowicz, Frank (Ekstern)
Project Manager, organisational:
Olsen, Stig Irving (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 770,000.00 Danish Kroner
Project

Arbejdsmiljø i byggeprocessens designfase : En ABD-bog
Planning and Management of the Built Environment
Department of Management Engineering
Period: 01/06/2008 → 31/12/2009
Number of participants: 1
Project participant:
Jørgensen, Kirsten (Intern)

Financing sources
Interaction between regulation, car choice, and energy consumption

Department of Transport
Period: 01/06/2008 → 01/02/2011
Number of participants: 1
Project participant:
Mulalic, Ismir (Intern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Forskningsprojekter - Miljø- og Energiministeriet
Amount: 1,988,000.00 Danish Kroner

On Outsourcing and Off shoring: A Strategic View of the Challenges Facing Management and Engineering

Department of Management Engineering
Period: 01/06/2008 → 21/12/2011
Number of participants: 6
Phd Student:
Herbert-Hansen, Zaza Nadja Lee (Intern)
Supervisor:
Rasmussen, Lauge Baungaard (Intern)
Main Supervisor:
Ahmed-Kristensen, Saeema (Intern)
Examiner:
Jensen, Per Anker (Ekstern)
Cardinal, Julie Stal-Le (Ekstern)
Jensen, Thomas Aakjaer (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet

Evaluation of Interventions towards Young people in school food programs, EVIUS.
The project aims at evaluating the effects on children of different healthy school food interventions. The project consists of a several work packages with the following research questions: WP1 - Diet & Nutrition: Does the school food has an effect on the student's dietary intake? Is dietary intake different for students in different age groups? WP2 - Coaching & counselling How can coaching of intermediaries be developed to efficacy Does coaching of intermediaries have an effect on dietary intake? WP3 - Learning & preferences How does the school food environment influence the learning climate? How does the school food environment influence the well-being and concentration of the students? WP 4 - Sociotechnical approach to school food What type of meaning and sense does teachers and students attribute to different school food concepts? What organisational and social pre-conditions are needed for the long term survival of school food programs? Does price has an effect on the students demand and use of the school food programme?

Division of Nutrition
National Food Institute
Department of Management Engineering
Aalborg University
Aarhus University
Boris Andersen Counselling
The Danish Catering Centre
Y Group
Period: 01/05/2008 → 31/12/2009
Number of participants: 1
Project Manager, organisational:
Mikkelsen, Bent Egberg (Intern)

Project

IT based management-by-objectives in hospitals
Department of Management Engineering
Period: 01/05/2008 → 28/09/2011
Number of participants: 5
Phd Student:
Traberg, Andreas (Intern)
Main Supervisor:
Jacobsen, Peter (Intern)
Examiner:
Rasmussen, Lauge Baungaard (Intern)
Ceglarek, Darek J. (Ekstern)
Jensen, Kenneth (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

Prognoseværkø for bilsalget i Danmark
Department of Transport
Period: 01/05/2008 → 01/07/2008
Number of participants: 1
Project participant:
Mulalic, Ismir (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 100,000.00 Danish Kroner
Project

Solving Recovery Problems using Optimisations Methods
Department of Management Engineering
Period: 01/05/2008 → 28/09/2011
Number of participants: 6
Phd Student:
Rasmussen, Matias Sevel (Intern)
Supervisor:
Ryan, David (Ekstern)
Main Supervisor:
Larsen, Jesper (Intern)
Examiner:
Larsen, Allan (Intern)
Gustafsson, Tomas (Ekstern)
Rönnqvist, Mikael (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD
Danish participation in IEA-ETSAP, Annex XI, 2008-2010

Department of Management Engineering
Period: 01/04/2008 → 30/04/2011
Number of participants: 1
ETSAP, MARKAL/TIMES, EU-NEEDS
Project ID: 63011-0129 (EUDP)
Project participant:
Grohnheit, Poul Erik (Intern)

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Energy Demand Modelling

Department of Management Engineering
Period: 01/04/2008 → 26/02/2013
Number of participants: 6
Phd Student:
Zvingilaite, Erika (Intern)
Supervisor:
Karlsson, Kenneth Bernard (Intern)
Main Supervisor:
Klinge Jacobsen, Henrik (Intern)
Examiner:
Nielsen, Per Sieverts (Intern)
Ahlgren, Erik (Intern)
Ejling Larsen, Anders (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

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Healthy eating strategies for corporate dining - embedding CanteenTakeAway activities

Department of Management Engineering
Period: 01/04/2008 → 28/03/2012
Number of participants: 7
Phd Student:
Poulsen, Signe (Intern)
Supervisor:
Mikkelsen, Bent Egberg (Intern)
Tetens, Inge (Intern)
Main Supervisor:
Jørgensen, Michael Søgaard (Intern)
Examiner:
Clausen, Christian (Intern)
Lennernäs, Maria (Ekstern)
Poulsen, Kjeld B. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet
Project: PhD

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Informationssvigt i forbindelse med patientoverførsel

Department of Management Engineering
Policy Influence of Indicators
The overall aim of the POINT project is to help find better ways of using indicators in all aspects of policy, but with a thematic focus on the role of indicators in policy processes fostering and supporting change in areas of ‘Sustainable Development’ policy, including how environment is integrated in other sector policy areas.

Department of Transport
Period: 01/04/2008 → 31/03/2011
Number of participants: 2
Acronym: POINT
Project participant:
Sørensen, Claus Hedegaard (Intern)
Project Manager, organisational:
Gudmundsson, Henrik (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 1,404,686.00 Danish Kroner

The space between organizations
Department of Management Engineering
Period: 01/04/2008 → 28/03/2012
Number of participants: 7
Phd Student:
Egebjerg, Christin (Intern)
Supervisor:
Emmitt, Stephen (Intern)
Kreiner, Kristian (Ekstern)
Main Supervisor:
Bonke, Sten (Intern)
Examiner:
Andersson, Niclas (Intern)
Ladegaard, Claus (Ekstern)
Linderoth, Henrik (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Eksternt finansieret virksomhed
Project: PhD
Udvikling af koncept for coaching af ph.d.-studerende

Innovation and Sustainability

Department of Management Engineering

Administration
Period: 01/04/2008 → 30/06/2010
Number of participants: 2
Project ID: 80927
Project participant:
Christiansen, Birgitte Lund (Intern)
Project Manager, organisational:
Godskesen, Mirjam Irene (Intern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Amount: 621.00 Danish Kroner

New AI and its Application in Hospital Service Robotics

Department of Management Engineering
Period: 15/02/2008 → 31/08/2011
Number of participants: 6
Phd Student:
Özkil, Ali Gürcan (Intern)
Supervisor:
Aanæs, Henrik (Intern)
Klæstrup Kristensen, Jens (Intern)
Main Supervisor:
Fan, Zhun (Intern)
Examiner:
Ravn, Ole (Intern)
Hallqvist, Claes Brylle (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Safe manning simulation tool

The aim of this Danish research project is to develop a simulation tool for estimating the resources needed for manoeuvring commercials vessels.

Department of Management Engineering
Safety, Reliability and Human Factors
Safety, Reliability and Human Factors
Production and Service Management
FORCE Technology

Søfartsstyrelsen
Period: 01/02/2008 → 30/09/2009
Number of participants: 3
Simulation, Ship, Staffing, Manning, Discrete-Event Simulation, Safety
Acronym: Safe Manning
Project ID: 81009
Project participant:
Alapetite, Alexandre (Intern)
Weber, Steen (Intern)
Environmental improvement through product development

Companies in Denmark and abroad are working increasingly to reduce human impacts on the environment and nature. At the same time there must still be a large focus on the creation of value for customers and consumers. This development gives rise to a huge potential for Danish companies, to create new business opportunities, where sustainable development and value creation are integrated early in the design of new products and services. There is a great opportunity for businesses to create a new and positive agenda, where the focus is on all the good that companies can do for the environment, society and economic growth. Such an agenda must, of course, be based on a high involvement of the competencies of the companies’ own employees, as well as those of partners in the value chain. The Danish Environmental Protection Agency and the Confederation of Danish Industry are cooperating on this project with DTU and IPU, to promote and aid the establishment of such a new agenda. Focus is placed on how products and services can be designed so not to harm humans, the environment and nature. The project’s main result will be a Guide to environmental improvement through product development. The Guide will give inspiration and a stepwise approach to integrating positive environmental effects into companies’ design and product development processes. The Guide is intended primarily to aid product developers who have the task of building environmental thinking into the product development process. However environmental staff, industrial designers, manufacturing staff and others can also benefit from reading the Guide. The project will start with a review of the environmentally-oriented methods used and product development activities carried out in Danish and international companies, as well as experience gained through a series of workshops with Danish companies. This project is financed through the Danish Environmental Protection Agency’s company funding scheme.

Engineering Design and Product Development

Department of Management Engineering

Institute for Product Development

Dansk Industri
Period: 01/02/2008 → 31/03/2009
Number of participants: 3

Ecodesign
Acronym: MPU
Project ID: 80891
Project participant:
Bey, Niki (Intern)
Stokbro, Kristian (Ekstern)
Project Manager, organisational:
McAlone, Tim C. (Intern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Forskningsprojekter - Miljø- og Energiministeriet
Amount: 587,393.00 Danish Kroner
Project

Kvantitative metoder til vurdering af fremtidige køreplaner

Department of Transport
Period: 01/02/2008 → 27/01/2014
Number of participants: 6
Phd Student:
Schittenhelm, Bernd Hermann (Intern)
Supervisor: 
Landex, Alex (Intern)
Main Supervisor: 
Nielsen, Otto Anker (Intern)
Examiner: 
Madsen, Oli B.G. (Intern)
Preston, John (Ekstern)
Weidmann, Ulrich Alois B. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Ansat eksternt
Project: PhD

Professionelt tilberedte måltider
National Food Institute
Division of Industrial Food Research
National Institute of Aquatic Resources
Department of Management Engineering
Period: 01/02/2008 → 31/12/2012
Number of participants: 1
Project Manager, organisational: 
Adler-Nissen, Jens (Intern)

Financing sources
Source: Public research programme (public)
Name of research programme: Fødevareforskningsprogrammet 2007
Amount: 4,470,000.00 Danish Kroner
Project

Center for Facilities Management - Realdania Forskning
Department of Management Engineering
Management Science
Implementation and Performance Management
Period: 01/01/2008 → …
Number of participants: 1
Acronym: CFM
Project Manager, organisational: 
Jensen, Per Anker (Intern)
Project

Appraisal of Transport Projects: Combining Cost-Benefit Analysis and Multi-Criteria Analysis
Department of Transport
Period: 01/01/2008 → 28/09/2012
Number of participants: 5
Phd Student: 
Jensen, Anders Vestergaard (Intern)
Main Supervisor: 
Leleur, Steen (Intern)
Examiner: 
Nielsen, Thomas Alexander Sick (Intern)
Kronbak, Jacob (Intern)
Lannér, Gunnar (Ekstern)
Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

DTU Climate Change Technologies programme: Workshop on Sustainable Buildings
Department of Civil Engineering
Department of Management Engineering
Period: 01/01/2008 → 31/12/2008
Number of participants: 3
Project ID: 25887
Project participant:
Eile, Morten (Intern)
Svendsen, Svend (Intern)
Tommerup, Henrik M. (Intern)

Financing sources
Source: [Ordinær drift UK 10]
Name of research programme: [Ordinær drift UK 10]
Amount: 120,000.00 Danish Kroner
Project

Evaluering af Design og Innovation uddannelsen
Department of Management Engineering
Period: 01/01/2008 → 01/08/2010
Number of participants: 2
Project participant:
Brodersen, Søsser (Intern)
Lindegaard, Hanne (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 0.00 Danish Kroner
Project

HYdrological Modelling for Assessing Climate Change Impacts at different Scales
HYdrological Modelling for Assessing Climate Change Impacts at different Scales (HYACINTS) has developed new methodologies and tools for assessing climate change impacts on water resources at different spatial scales. The main project components were:

- Coupling of DMI's regional climate model HIRHAM and DHI's hydrological modelling system MIKE SHE and conversion of GEUS' national water resources model to run in the coupled system aiming at reducing simulation uncertainty.
- Development of methodologies for using a spatially refined model grid in parts of a model domain where more detailed descriptions of hydrogeological conditions are required. An SME project on digital geological modelling was associated to this component.
- Development of methodologies for estimating precipitation and evapotranspiration from satellite data, particularly aimed at application in data poor regions in the world
- Assessment of uncertainty propagation in the calculation chain (emission scenarios→global climate models→regional climate models→downscaling/bias correction methods→hydrological models→hydrological change) and identification of sources of uncertainty in projections of climate change impacts on water resources.

Department of Management Engineering
Systems Analysis
DTU Climate Centre
Period: 01/01/2008 → 31/12/2013
Number of participants: 2
Acronym: HYACINTS
Life Cycle Assessment in Developing Countries and Governance in Global Value Chains

Focussing on Life Cycle Assessment (LCA) tools, the research concerns the capacities which developing countries need to build to adjust to environmental standards and thus increase their access to international markets. It will identify the efforts to be undertaken by the developing countries as well as the interventions to be initiated by developed countries as part of their programmes of international development cooperation.

Department of Management Engineering
Period: 01/01/2008 → 31/08/2009
Number of participants: 1
Capacity development, Life Cycle Assessment, Developing Countries
Project ID: 80806
Project Manager, organisational:
Wangel, Arne (Intern)

Financing sources
Source: Forskningsprojekter - Udenrigsministeriet (Danida)
Name of research programme: Forskningsprojekter - Udenrigsministeriet (Danida)
Amount: 1,500,000.00 Danish Kroner

Optimising Transport Decision Making by use of Customised Decision Models and Decision Conferences

Department of Transport
Period: 01/01/2008 → 28/03/2012
Number of participants: 5
Phd Student:
Barfod, Michael Bruhn (Intern)
Main Supervisor:
Leleur, Steen (Intern)
Examiner:
Kveiborg, Ole (Intern)
Næss, Petter (Ekstern)
Pearman, Alan (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD

Sammenhænge mellem produktivitet og psykisk arbejdsmiljø

Department of Management Engineering
Copenhagen Business School
Det Nationale Forskningscenter for Arbejdsmiljø

Task-consult
Period: 01/01/2008 → 31/12/2010
Number of participants: 6
Acronym: SaPPA
Project ID: 80818
Project participant:
Edwards, Kasper (Intern)
Pedersen, Jens Dahl (Intern)
Mouritsen, Jan (Ekstern)
Pejtersen, Jan H. (Ekstern)
Kristensen, Tage S. (Ekstern)

Project Manager, organisational:
Møller, Niels (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 3,231,344.00 Danish Kroner

Relations
Activities:
LEAN – arbejdsmiljø og relationel koordinering – hvordan arbejder vi med LEAN i dette spændingsfelt.
Social kapital og produktivitet
Social kapital – teori, begreber og cases
Forandring fryder eller?? Om produktivitet og trivsel
Trivsel på arbejdspladsen – handlinger og muligheder
Social kapital, ledelse og produktivitet
Eksekvering – Betydningen af performance management og social kapital
Hvilken effekt har driftsmålstyring på trivslen og hvad kan man med fordel måle på?
KPI’er, performance og adfærd
Performance management systemet og KPI’er skaber rammerne for samarbejdet
Lean, arbejdsmiljø, social kapital og relationel koordinering: Erfaringer fra forskningsprojekter
Social kapital og relationel koordinering
Lederkonference 2013
Social kapital, ledelse og produktivitet
Social kapital og produktivitet
Lean and servant leadership
Finanforbundet University: Ledelse – den væsentligste faktor for en produktivitet og social kapital
Social kapital og produktivitet
Performance management: You get what you want – but do you want what you get?
Arbejdsmiljø og lean
KPI’er – hvad er det og hvilken effekt har de på trivsel og produktivitet
Sammenhænge mellem social kapital og produktivitet
Social kapital, ledelse og produktivitet
Social kapital og relationel koordinering: To væsensforskellige tilgange til trivsel og produktivitet
Performance management- et effektivt instrument med bivirkninger
Lean og arbejdsmiljø

Publications:
Ledelse med social kapital giver høj produktivitet
Press / Media items:
Profitten Stiger, når folk har det godt
Profitmål stresser ansatte
Så godt som penge i banken
Vi skal alle "performe"

Interview i Ledelse i dag: Når kompleksitet er et grundvilkår for ledelse

Project

Trivsel, produktivitet og selvledelse: Et studie af selvledelses betydning for trivsel og produktivitet i det moderne arbejdsliv
Department of Management Engineering
Det Nationale Forskningscenter for Arbejdsmiljø
Period: 01/01/2008 → 01/01/2012  
Number of participants: 8  
Project participant:  
Pedersen, Michael (Intern)  
Kristensen, Anders Raastrup (Intern)  
Bojesen, Anders (Intern)  
Raffnæe, Sverre (Intern)  
Mogensen, Mette (Intern)  
Olesen, Kristian Gylling (Intern)  
Andersen, Vibeke (Intern)  
Project Manager, organisational:  
Bramming, Pia (Intern)  

Financing sources  
Source: Forskningsrådene - Andre  
Name of research programme: Forskningsrådene - Andre  
Amount: 4,800,000.00 Danish Kroner  

Valuation of non-market goods, discrete responses and reference-dependent preferences  
Department of Transport  
Period: 01/01/2008 → 01/02/2011  
Number of participants: 2  
Project ID: 35173  
Project participant:  
Hjorth, Katrine (Intern)  
Project Manager, organisational:  
Fosgerau, Mogens (Intern)  

Financing sources  
Source: Forskningsrådene - Andre  
Name of research programme: Forskningsrådene - Andre  
Amount: 2,079,605.00 Danish Kroner  

Development of an Concept Generator based on Empirical Studies  
Department of Management Engineering  
Period: 15/11/2007 → 28/03/2012  
Number of participants: 5  
Phd Student:  
Sudin, Mohd Nizam Bin (Intern)  
Main Supervisor:  
Ahmed-Kristensen, Saeema (Intern)  
Examiner:  
Hansen, Claus Thorp (Intern)  
Pulkkinen, Antti Juhani (Ekstern)  
Storga, Mario (Ekstern)  

Financing sources  
Source: Internal funding (public)  
Name of research programme: Stipendie fra udlandet  
Project: PhD  

Cost-Effektive Low-Energy Advanced Sustainable Solutions  
Department of Management Engineering  
Cenergia
Ledelsessteknologier og fagidentitet: Et kvantitativt studie af ingeniørers psykiske arbejdsmiljø

Department of Management Engineering
Period: 01/11/2007 → 30/06/2008
Number of participants: 2
Project participant:
Nielsen, Flemming Kjeld (Intern)
Project Manager, organisational:
Andersen, Vibeke (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 250,000.00 Danish Kroner

Facilitating Value Creation and Delivery in Construction Projects

Department of Management Engineering
Period: 01/10/2007 → 06/04/2011
Number of participants: 7
Phd Student:
Thyssen, Mikael Hygum (Intern)
Supervisor:
Christoffersen, Anders K. (Ekstern)
Emmitt, Stephen (Intern)
Main Supervisor:
Bonke, Sten (Intern)
Examiner:
Jensen, Per Anker (Ekstern)
Beim, Anne (Ekstern)
Hansen, Geir K. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Ansat eksternt
Project: PhD

Advanced Planning in Food Supply Chains

Department of Management Engineering
Period: 01/09/2007 → 31/08/2011
Number of participants: 6
Phd Student:
Traceability of Layout Design of Agricultural Machinery

Department of Management Engineering
Period: 01/09/2007 → 25/06/2013
Number of participants: 7
Phd Student:
Meri, Vinicius Kaster (Intern)
Supervisor:
Kozin, Igor (Intern)
Main Supervisor:
Ahmed-Kristensen, Saeema (Intern)
Examiner:
Edwards, Kasper (Intern)
McMahon, Christopher Alan (Ekstern)
Miller, Thomas Dedenroth (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Globaliseringsmidler
Project: PhD

Evaluation of food safety management systems in the Danish school meal sector

This project focuses on HACCP-based own-control systems in the catering industry, using the Danish school meal sector as an example. The background of the project emerges from an assumption that the management tools used by SMEs not always lead to the wanted consumer safety. The food safety systems and technologies used are often not adjusted to practise and are not fitted to the daily routines in the SMEs. Therefore, HACCP-based own-control systems may obstruct the innovation, may be inappropriate implemented or may be detached from the other management systems in SMEs. Finally, HACCP-based own-control systems may also be technologically over-dimensioned resulting in poorer eating quality. The aim is to evaluate the efficiency of food safety management systems in SMEs in order to improve and simplify them.

Division of Microbiology and Risk Assessment
National Food Institute

Department of Management Engineering
Period: 01/08/2007 → 31/12/2010
Number of participants: 2
Acronym: SAFEMAN
Project participant:
Hansen, Tina Beck (Intern)
Project Manager, organisational:
Christensen, Bjarke Bak (Intern)
Project
PhD Supervision Collective for Sustainable Product Innovation

Sustainable Product Innovation (SPI) is a young but rapidly expanding research field, especially in the areas of environmental product assessment and design for environment. It has evolved from end-of-life focused approaches towards prevention through cleaner production and eco-design. In industry too a number of pro-active companies changed their controlling and complying posture in the direction towards a more preventive and strategic attitudes on environmental issues. The emphasis on environmental issues thereby shifted over the years from a more technical approach towards more organisational aspects of sustainable design. Whereas in recent years, the balance between ecological and economical considerations have been subject of research, a growing attention for social matters has resulted in this becoming a third component of what is now understood to be design for sustainability. Thus, sustainable product design is product development in which the three aspects of the ‘triple bottom line’ – the economical, environmental and societal sides of design (or profit, planet and people) – are increasingly taken into account. The first academic scholars that, in the mid 1990’s, earned their PhD degrees in this field were often supervised by professors without any academic upbringing in this field. Generally, these professors had backgrounds in traditional technical, natural science or social disciplines, in either academia or industry. This also meant that these pioneers did their research in the context of a variety of disciplines and scientific environments, without the ability to rely on a common research culture, norms, methodologies, a large body of previous research, or even a network. In many ways, research in sustainable product innovation in the period 1992-2002 was of a grounded and explorative nature. The scholars who earned their PhD degrees in this field five to ten years ago, are today’s supervisors of PhD research. These people do have the academic background and network in the field, but are often young and relatively unexperienced in supervising PhD students. Regular courses in scientific research and supervision training may offer tools to develop general PhD research supervision skills, but likely, such skills are to benefit from systematic consideration of experiences from fellow supervisors. This view is strengthened by the fact that, as Sustainable Product Innovation is still a relatively small field and multidisciplinary of nature as well, academic activities in these fields are often housed in environments that only provide one perspective, such as mechanical engineering, chemical process technology, industrial economics, machine design, product design, industrial ecology, or business management. Therefore PhD candidates as well as their supervisors are often surrounded by only few colleagues (or sometimes none) those meet the same academic challenges, e.g. building further on a research tradition, making use of previous departmental research results, using similar theoretical frameworks and similar networks.

Engineering Design and Product Development
Department of Management Engineering
Institute for Product Development
Norwegian University of Science and Technology
Chalmers University of Technology
Helsinki School of Economics
Lund University
Linköpings Universitet
Period: 01/08/2007 → 01/04/2008
Number of participants: 7
Project ID: Ingen DTU Projektnr. men NordForsk ref. 070038
Project participant:
McAloone, Tim C. (Intern)
Baumann, Henrikke (Ekstern)
Bey, Niki (Intern)
Jalas, Mikko (Ekstern)
Plepys, Andrius (Ekstern)
Lindahl, Mattias (Ekstern)
Project Manager, organisational:
Boks, Casper (Ekstern)

Financing sources
Source: Forsk. Andre offentlige og private - Nordiske
Name of research programme: Forsk. Andre offentlige og private - Nordiske
Amount: 205,000.00 Danish Kroner

Solution methods for solving routing and scheduling problems
Department of Management Engineering
Period: 01/08/2007 → 28/09/2011
Number of participants: 7
Phd Student:
Reinhardt, Line Blander (Intern)
Supervisor:
Kallehauge, Brian (Intern)
Madsen, Oli B.G. (Intern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Repke, Stefan (Intern)
Salazar González, Juan José (Ekstern)
Vigo, Daniele (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Systemisk acceleration af innovation i byggeriet
Department of Management Engineering
Period: 01/08/2007 → 25/01/2012
Number of participants: 7
Phd Student:
Jensen, Jens Stissing (Intern)
Supervisor:
Koch, Christian (Intern)
THOMASSEN, MIKKEL ANDREAS (Intern)
Main Supervisor:
Bonke, Sten (Intern)
Examiner:
Jørgensen, Ulrik (Intern)
Haugbølle, Kim (Intern)
Smith, Adrian (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Nanotribology
Manufacturing Engineering
Department of Mechanical Engineering
Department of Management Engineering
Period: 01/07/2007 → 30/11/2009
Number of participants: 4
Project participant:
Tosello, Guido (Intern)
De Grave, Arnaud (Intern)
Sivebæk, Ion Marius (Intern)
Project Manager, organisational:
Hansen, Hans Nørgaard (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 750,000.00 Danish Kroner
Project
Automated Design of Advanced Mechatronic Systems

Department of Management Engineering
Period: 15/05/2007 → 11/05/2011
Number of participants: 7
Phd Student:
Dupuis, Jean-Francois (Intern)
Supervisor:
Goodman, Erik (Ekstern)
Sigmund, Ole (Intern)
Main Supervisor:
Fan, Zhun (Intern)
Examiner:
Blank, Mogens (Intern)
Jin, Yaochu (Ekstern)
Zhang, Qingfu (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Adfærdsmodeller for passagerers rutevalg

Department of Transport
Period: 01/05/2007 → 25/08/2014
Number of participants: 6
Phd Student:
Anderson, Marie Karen (Intern)
Supervisor:
Prato, Carlo Giacomo (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Rich, Jeppe (Intern)
Bekhar, Shlomo (Ekstern)
Börjesson, Maria (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Analyse og modellering af distribuerede elsystemer med høj andel vedvarende energi

Department of Management Engineering
Period: 01/05/2007 → 01/06/2011
Number of participants: 6
Phd Student:
Juul, Nina (Intern)
Supervisor:
Clausen, Jens (Intern)
Meibom, Peter (Intern)
Main Supervisor:
Pisinger, David (Intern)
Examiner:
Stidsen, Thomas Jacob Riis (Intern)
Söder, Lennart (Ekstern)
Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

Healthy CanteenTakeAway at workplace
The idea behind CanteenTakeAway (CTA) is that healthy eating can be promoted by increasing accessibility of healthy meals from workplace canteens. The aim of the workpackage at the National food Institute is to develop and validate a novel canteen index and to use this tool in the evaluation of the effectiveness of improving the dietary intake among selected employees.

National Food Institute
Department of Management Engineering
Danish Cancer Society
University of Copenhagen
Period: 01/05/2007 → 30/04/2010
Number of participants: 0

Effektiv fjernvarme i fremtidens energisystem
Department of Management Engineering
EA Energianalyse A/S
RAM-lose
Dansk Fjernvarme Forening
CTR I/S
Fredericia Fjernvarme
Skanderborg Fjernvarme
Københavns Energi A/S
Period: 01/04/2007 → 15/12/2008
Number of participants: 4
Fjernvarme
Project ID: 1200222
Project participant:
Münster, Marie (Intern)
Karlsson, Kenneth Bernard (Intern)
Larsen, Helge V. (Intern)
Project Manager, organisational:
Morthorst, Poul Erik (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: EFP Energistyrelsen
Amount: 362,067.60 Danish Kroner

Relations
Publications:
The role of district heating in the future Danish energy system
Effektiv fjernvarme i fremtidens energisystem

Regularitet forstudie
Department of Transport
Period: 01/04/2007 → 31/08/2008
Number of participants: 3
Project ID: 35170
Project participant:
Brems, Camilla Riff (Intern)
Hjorth, Katrine (Intern)
Project Manager, organisational:
Fosgerau, Mogens (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 525,000.00 Danish Kroner

Arbejdsmiljøløsninger i callcentre : drevet af benchmarking og videndeling i netværk

Work, Technology and Organisation
Department of Management Engineering
Team Arbejdsliv
Det Nationale Forskningscenter for Arbejdsmiljø
Period: 15/03/2007 → 15/01/2010
Number of participants: 6
Acronym: Amica
Project ID: 80766
Project participant:
Møller, Niels (Intern)
Weller, Tina (Intern)
Mathiesen, Karin (Ekstern)
Sørensen, Ole Henning (Ekstern)
Burr, Hermann (Ekstern)
Project Manager, organisational:
Wiegmann, Inger-Marie (Ekstern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 4,896,963.00 Danish Kroner

Designed Technological Systems: The Cases of Urban Transportation in Copenhagen and Bogotá

Department of Management Engineering
Period: 01/02/2007 → 01/09/2010
Number of participants: 5
Phd Student:
Pineda, Andres Felipe Valderrama (Intern)
Main Supervisor:
Jørgensen, Ulrik (Intern)
Examiner:
Jensen, Torben Elgaard (Intern)
Marques, Ivan da Costa (Ekstern)
Summerton, Jane (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønned stipendie
Project: PhD

GNSS-based Road Charging Systems

Department of Transport
The envisaged increase of electricity generation from renewable energy sources (RES-E) of intermittent nature like wind and photovoltaics will increase electricity system costs dramatically. As a result, the European renewable energy target is not likely to be achieved in 2020 in case no system cost reducing measures are taken. Therefore, RESPOND developed
policy responses and regulatory framework improvements in order to integrate RES-E more optimally in different segments of the electricity system; generation, trade and balancing markets, demand, and networks. Results were successfully presented at conferences and policy meetings in Brussels, Vienna and Leuven aimed at European and national policy makers, regulators, TSOs, DSOs, renewable generators, suppliers and other power system actors.

Department of Management Engineering
Energy Research Centre of the Netherlands
Comillas University
Imperial College of Science, Technology and Medicine
Red Electica de Spain
Deutsch Energie-Agentur GmbH

Period: 01/01/2007 → 31/05/2009
Number of participants: 1
Acronym: RESPOND
Project participant:
Klinge Jacobsen, Henrik (Intern)

Improvement of the Social Optimal Outcome of Market Integration of DG/RES in European Electricity Markets
Intelligent Energy Europe.

Analysing incentives and interactions between Distribution System Operators (grid), Distributed Generators (DG) and the power markets. Designing regulatory policies that support efficient integration of DG in distribution grids including localisation and operational flexibility.

Department of Management Engineering
Energy Research Centre of the Netherlands
Comillas University
Vienna University of Technology

Period: 01/01/2007 → 01/09/2010
Number of participants: 3
Acronym: IMPROGRES
Project participant:
Klinge Jacobsen, Henrik (Intern)
Schröder, Sascha Thorsten (Intern)
Ropenus, Stephanie (Intern)

Relations
Publications:
Network Regulation and Support Schemes - How Policy Interactions Affect the Integration of Distributed Generation
Market and regulatory incentives for cost efficient integration of DG in the electricity system

Biopolymer nanocomposite films and food packaging
Plastics produced from biodegradable polymers such as polyactide (PLA) are of increasing commercial interests. They are manufactured from renewable resources such as agricultural products and have the potential to meet environmental requirements. However, a wider use of PLA in food packaging requires further material development in order to achieve the necessary stability and permeability profile to gas or water vapour. In the NanoPack project we will investigate improvement of PLA properties through nanoscale reinforcement using reinforcing fillers based on natural clay silicates and metal hydroxides. The National Food Institute will characterise nanoparticles migrating from PLA film and perform in-vitro and in-vivo toxicological studies on relevant effect parameters. A thorough risk characterisation in the context of their use in food packaging will be performed by integrating results from exposure estimates and toxicological studies.

UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC)
Systems Analysis Division
Risø National Laboratory for Sustainable Energy
Division of Food Chemistry
National Food Institute
University of Copenhagen
Period: 01/01/2007 → 01/07/2011
Number of participants: 3
Project participant:
Larsen, Erik Huusfeldt (Intern)

Project Manager, organisational:
Plackett, David (Ekstern)
Petersen, Jens Højslev (Intern)

Project

Center for udfældning, modellering og karakterisering af højsmeltende blyfri mikrolod
Department of Management Engineering
Period: 01/01/2007 → 30/06/2010
Number of participants: 4
Project Manager, organisational:
Hansen, Hans Nørgaard (Intern)
Hattel, Jesper Henri (Intern)
Hald, John (Intern)
Somers, Marcel A. J. (Intern)

Financing sources
Source: Forskningsprojekter - Erhvervsforskere, VTU
Name of research programme: Forskningsprojekter - Erhvervsforskere, VTU
Amount: 4,500,000.00 Danish Kroner

Project

Coherent Energy and Environmental System Analysis

Department of Management Engineering
Department of Environmental Engineering
Department of Electrical Engineering
Electric Energy Systems
Aalborg University
University of Southern Denmark
Royal Veterinary and Agricultural University
Copenhagen Business School
Anvendt KommunalForskning
DONG Energy A/S
Period: 01/01/2007 → 31/12/2010
Number of participants: 6
Acronym: CEESA
Project ID: 1200211
Project participant:
Münster, Marie (Intern)
Møller Andersen, Frits (Intern)
Pade, Lise-Lotte (Intern)
Astrup, Thomas (Intern)
Østergaard, Jacob (Intern)
Project Manager, organisational:
Morthorst, Poul Erik (Intern)

Financing sources
Source: Public research council
Name of research programme: Forsknings og innovationsstyrelsen – programkomiteen for energi og miljø
Amount: 14,958,866.00 Danish Kroner

Relations
Publications:
Danish Wind Power Export and Cost
Coherent Energy and Environmental System Analysis
Control Architecture Modeling for Future Power Systems

EFP07 – Bygningsintegreret Energiforsyning
Department of Management Engineering
Statens Byggeforskningsinstitut
Aalborg University
Danish Technological Institute
Period: 01/01/2007 → 01/09/2008
Number of participants: 2
Individuel energiforsyning
Acronym: BIEF
Project ID: 1200218
Project participant:
Münster, Marie (Intern)
Project Manager, organisational:
Morthorst, Poul Erik (Intern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energi ministeriet
Name of research programme: Energiforskningsprogrammet (EFP)
Amount: 2,345,000.00 Danish Kroner

Relations
Publications:
Assessment of Building Integrated Energy Supply and Energy Saving Schemes on a National Level in Denmark

FEAT2015 : Jordbrugs- og fødevaresektorens udviklingsmuligheder i et regionalt innovationssystem perspektiv
Department of Management Engineering
Aalborg University
Gemba Innovation A/S
Period: 01/01/2007 → 01/01/2009
Number of participants: 3
Project participant:
Borch, Kristian (Intern)
Andersen, Per Dannemand (Intern)
Project Manager, organisational:
Rasmussen, Birgitte (Intern)

Financing sources
Source: Program. Andre statslige danske - Andre prog.midler
Name of research programme: Program. Andre statslige danske - Andre prog.midler
Renewable energy in the transport sector using biofuels as energy carriers

Biofuels, especially ethanol, have been in political focus for the last couple of years, both internationally and in Denmark. For the European Union, the EU Biofuel Directive has set a target of 5.75% by 2010 for the biofuel share of transport fuels. This has resulted in a couple of projects examining the impacts of biofuel introduction, by looking at individual production processes or lifecycle analyses of single technology applications. However, no detailed analyses of the nationwide implications in terms of changes in emissions, land use and other environmental effects have been undertaken to date. This project applies a scenario approach to investigate the abovementioned effects for Denmark. Three different transport fuel scenarios, a business-as-usual scenario, an EU policy scenario that adheres to the targets outlined in the EU Biofuel Directive and an impact-adapted scenario will be described. The impact-adapted scenario will incorporate the results of the two previous scenarios and outline a sustainable option for biofuel introduction in Denmark, taking into consideration and examining mitigation of, where possible, the negative implications for the environment and land use.
Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet
Project: PhD

Teaching, Studying and Learning: Undersøgelse af effekter og konsekvense af intensiv og aktiverende undervisning
Department of Civil Engineering
Office for Study Programmes and Student Affairs
Administration
Department of Mechanical Engineering
Department of Micro- and Nanotechnology
Department of Chemical and Biochemical Engineering
Department of Management Engineering
Period: 01/01/2007 → 31/03/2009
Number of participants: 5
Acronym: TeSt-Learn
Project participant:
Vigild, Martin Etchells (Intern)
Horsewell, Andy (Intern)
Thomsen, Erik Vilain (Intern)
Szabo, Peter (Intern)
Project Manager, organisational:
Christansen, Hans Peter (Intern)

Financing sources
Source: Uddannelse. Statslige. Andre statslige
Name of research programme: Uddannelse. Statslige. Andre statslige
Amount: 95,000.00 Danish Kroner
Project

Modeller og Metoder for optimeringsproblemer med kombineret resourceplanlægning og skedulering
Department of Management Engineering
Period: 01/12/2006 → 01/09/2010
Number of participants: 5
Phd Student:
Dohn, Anders Høeg (Intern)
Supervisor:
Larsen, Jesper (Intern)
Main Supervisor:
Clausen, Jens (Intern)
Examiner:
Rönnqvist, Mikael (Ekstern)
vanden Akker, J. M. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Ecological economic perspectives on water issues: Co-advisor for Ph.D. student
Department of Management Engineering
Period: 01/11/2006 → 01/05/2009
Number of participants: 1
Project participant:
Røpke, Inge (Intern)
**Financing sources**
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 32,000.00 Danish Kroner
Project

**SCGE for freight**
Project for the ministry of transport concerned with the development of a SCGE freight model to evaluate road pricing for trucks

Administration
Department of Transport
Period: 18/10/2006 → 01/12/2007
Number of participants: 1
Project ID: 35123
Project Manager, organisational:
Rich, Jeppe (Intern)

**Financing sources**
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 146,140.00 Danish Kroner
Project

**Driving under the Influence of Drugs, Alcohol and Medicines**
The road transport system is one of the most hazardous and most expensive in terms of human lives in the European Union. As the EC White Paper suggests, the present level of investment in road safety fails to reflect the severity of the situation. Currently the EU spends less than 5% of the total cost of those accidents on developing safety countermeasures. However, a modern European transport system capable of upholding sustainable development within the EU must be reliable, safe and efficient. As consumption of psychoactive substances such as alcohol, drugs and certain medicines are likely to endanger the drivers aptitude and impaired driving is still one of the major causes for road accidents, some active steps have to be taken to reach the goal of a 50% reduction in the number of road deaths in the EU. The objective of DRUID is to give scientific support to the EU transport policy to reach the 2010th road safety target by establishing guidelines and measures to combat impaired driving by - conducting reference studies of the impact on fitness to drive for alcohol, illicit drugs and medicines as well as giving new insights to the real degree of impairment caused by psychoactive substances and their actual impact on road safety and generating recommendations for the definition of analytical and risk thresholds, - analysing the prevalence of alcohol and other psychoactive substances in accidents and in general driving, setting up a comprehensive and efficient epidemiological database, evaluating "good practice" for detection and training measures for road traffic police allowing a legal monitoring of drivers, - establishing an appropriate classification system of medicines affecting driving ability, give recommendations for its implementation and create a framework to position medicines according to a labelling system, - evaluating the efficiency of strategies of prevention, penalisation and rehabilitation, considering the difficulties of appropriate evaluation strategies for combined substance use and recommend "good practice", - defining strategies of driving bans, combining the road safety objectives with the individual’s need for mobility, - defining the responsibility of health care professionals for patients consuming psychoactive substances and their impact on road safety and elaborating guidelines and make information available and applicable for all European countries.

Traffic Safety
Department of Transport
Period: 15/10/2006 → 14/10/2011
Number of participants: 6
Acronym: DRUID
Project ID: 35150
Project participant:
Hels, Tove (Intern)
Janstrup, Kira Hyldekær (Intern)
Lyckegaard, Allan (Intern)
Kærup, Simon (Intern)
Project Manager, organisational:
Bernhoft, Inger Marie (Intern)
Larsen, Lotte (Intern)
**Financing sources**
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 4,800,000.00 Danish Kroner

**Project**

**Attraktive arbejdspadser i slagteribranchen**

Work, Technology and Organisation

Department of Management Engineering

Det Nationale Forskningscenter for Arbejdsmiljø

Team Arbejdsliv
Period: 01/10/2006 → 31/01/2009
Number of participants: 3
Project ID: 80751
Project participant:
Hasle, Peter (Ekstern)
Andersen, Tilde Rye (Ekstern)
Project Manager, organisational:
Møller, Niels (Intern)

**Financing sources**
Source: Forsk. Private danske - Fonde
Name of research programme: Forsk. Private danske - Fonde
Amount: 450,000.00 Danish Kroner

**Project**

**Attraktive arbejdspadser i slagteribranchen : - udvikling af værktøjer til at evaluere og udvikle projekter og samarbejdsaktiviteter i virksomhederne**

Department of Management Engineering
Period: 01/10/2006 → 01/10/2007
Number of participants: 3
Project participant:
Hasle, Peter (Intern)
Andersen, Tilde Rye (Intern)
Project Manager, organisational:
Møller, Niels (Intern)

**Financing sources**
Source: Sam.arb.aftaler, Private danske - Fonde
Name of research programme: Sam.arb.aftaler, Private danske - Fonde
Amount: 450,000.00 Danish Kroner

**Project**

**DanWORM - Danish version of Working on Occupational Risk Model : Accident prevention using ORM**

The risk perception in SME’s is normally low, which is closely related to the relatively few accidents that the small enterprises experience by themselves compared to larger enterprises. This is a fact even though the SME’s together represent a higher accident frequency compared to large enterprises. To reach the SME’s we have to find a way to support them because they normally do not have time nor the resources to get the necessary knowledge and awareness for working with their own safety. The Dutch developed WORM project is transferred into a Danish context, with the aim to create a more simple system targeted the SME. The WORM project develops a method that identifies the activities in a person’s daily work that contributes most the person’s risk and also identifies what conditions need to be changed in order to reduce that risk. Our investigation seeks to answer the question whether we can collect information about the risks in SME’s using the WORM method and whether we can find a way to present this information so that the SME’s will be able to use the information constructively. Finally we want to evaluate the impact of this method on occupational safety in SME’s, because the investigation also focuses on the management factors that can motivate the SME’s to increase their risk awareness and own initiatives. The project is carried out for three occupations, carpenters, caretakers, and blacksmiths, all working in enterprises with less than 50 employees.

Department of Civil Engineering
Planning and Management of the Built Environment

Period: 01/10/2006 → 01/07/2009
Number of participants: 3
Acronym: DanWorm
Project ID: 25766
Project participant:
Jørgensen, Kirsten (Intern)
Troen, Hanne (Ekstern)

Project Manager, organisational:
Duijm, Nijs Jan (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 2,270,196.00 Danish Kroner

Relations
Publications:
Demonstration of Risk Profiling for promoting safety in SME’s
Message maps for safety barrier awareness
Accident prevention in SME using ORM
Message maps for Safety Barrier Awareness
Prevention of accidents in SME’s
Risk assessment and prevention of occupational accidents
Risikovurdering og forebyggelse af arbejdsulykker

Project

Hurtigere tog i Danmark

Department of Transport
Københavns Kommune
Odense Kommune
Esbjerg kommune
Aarhus Kommune
Randers kommune
Aalborg Kommune

Number of participants: 3
Project participant:
Nielsen, Otto Anker (Intern)

Project Manager, organisational:
Landex, Alex (Intern)
Sylvan, Henrik (Ekstern)

Financing sources
Source: Sam.arb.aftaler - Amter og kommuner
Name of research programme: Sam.arb.aftaler - Amter og kommuner
Amount: 25,000.00 Danish Kroner

Project

LEAN uden stress: Udvikling af et bæredygtigt produktionsprincip

Work, Technology and Organisation
Department of Management Engineering
Det Nationale Forskningscenter for Arbejdsmiljø
Aalborg University
Period: 01/10/2006 → 30/09/2009
Number of participants: 12
Project ID: 80748
Project participant:
  Edwards, Kasper (Intern)
  Jensen, Per Langaa (Intern)
  Jacobsen, Peter (Intern)
  Bramming, Pia (Intern)
  Pejtersen, Jan (Intern)
  Hasle, Peter (Intern)
  Bojesen, Anders (Intern)
  Nielsen, Jacob S. (Ekstern)
  Nielsen, Anders Paaruo (Ekstern)
  Matthiesen, Rikke (Ekstern)
  Johansen, John (Ekstern)
Project Manager, organisational:
  Møller, Niels (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 5,948,574.00 Danish Kroner

Relations
Activities:
  Social kapital – teori, begreber og cases
  Trivsel på arbejdspladsen – handlinger og muligheder
  Lean without stres: The dangers and opportunities of lean
  Lean, arbejdsmiljø, social kapital og relationel koordinering: Erfaringer fra forskningsprojekter
  Lean og arbejdsmiljø
Press / Media items:
  Lean kan løfte arbejdsglæden
Project

Life Cycle Impact Assessment for Waste Management Systems
Department of Management Engineering
Period: 01/10/2006 → 31/08/2007
Number of participants: 2
Phd Student:
  Hansen, Morten Søes (Intern)
Main Supervisor:
  Hauschild, Michael Zwicky (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet
Project: PhD

Stressforebyggelse i videnarbejdet : - mellem begejstring og belastning
Manufacturing Engineering
Department of Mechanical Engineering
Department of Management Engineering
Period: 01/10/2006 → 31/12/2009
Number of participants: 7
Project ID: 80744
Project participant:
Sustainable Transport Planning - A Multi-Methodology Approach to Decision Making

Department of Transport  
Period: 01/10/2006 → 05/05/2010  
Number of participants: 5  
PhD Student: Jeppesen, Sara Lise (Intern)  
Main Supervisor: Leleur, Steen (Intern)  
Examiner: Christensen, Linda (Intern)  
Vidal, Rene Victor Valqui (Intern)  
Winslott Hiselius, Lena (Ekstern)  

Financing sources  
Source: Internal funding (public)  
Name of research programme: DTU-lønnet stipendie  
Project: PhD

Teknologivurdering i et kædeperspektiv. : Introduktion af genmodificerede afgrøder i Danmark.

Technical University of Denmark  
Department of Management Engineering  
University of Copenhagen  
Period: 01/10/2006 → 30/09/2009  
Number of participants: 4  
Project participant: Larsen, Anders Stig (Ekstern)  
Gylling, Morten (Ekstern)  
Pedersen, Jørgen Lindgaard (Intern)  
Project Manager, organisational: Pedersen, Søren Marcus (Ekstern)  

MOTOS - Transport Modelling: Towards Operational Standards in Europe

EU-project which based on a state-of-the-art review and user survey develops guidelines and standards of transport modelling with special focus on the new member states in EU. Partners are Goudappel Goudappel (NL), consortia leader, TNO (NL), CTT/DTI, DTF(DK, Obet (PL), Transman (HU), KTH (S), SUDOP (CZ), VGTU (LT). Leader of CTT’s part of the project, and the work package on state-of-the-art review (WP2). Funding: EU.

Department of Transport  
Period: 29/09/2006 → 31/05/2007  
Number of participants: 1  
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Forsk. EU - Andre EU-midler
Name of research programme: Forsk. EU - Andre EU-midler
Amount: 573,000.00 Danish Kroner

Project

Rapport om fremtidens fjernvarme
Rapporten afdækker 2 problemstillinger:
1. Hvad findes der af eksisterende rapporter, udredninger og analyser, der belyser fjernvarmes rolle i fremtidige energisystemer og/eller fremtidige fjernvarmevalg.
2. Hvilke rapporter, udredninger og analyser om fjernvarme er der behov for som indspil til scenarier og overvejelser om fremtidens energiforsyning med henblik på at sikre, at de mulige gevinster, som fjernvarme kan bidrage med, ikke overses på bekostning af mindre hensigtsmaessige (energieffektive) energisystemer.

Department of Management Engineering
Number of participants: 2

Fjernvarme
Project ID: 1200207
Project participant:
Münster, Marie (Intern)
Pade, Lise-Lotte (Intern)

Financing sources
Source: Forsk. Private danske - Andre
Name of research programme: Dansk Fjernvarme F&U
Amount: 50,000.00 Danish Kroner

Relations
Publications:
Bliver fjernvarmen en del af fremtidens energisystem?
Fremtidens Fjernvarme - Litteraturstudie

Project

Innovation C.I.R.C.U.S.
The objectives of this project are to examine and identify the driving factors behind innovation, to involve and tap into all potential stakeholders in society and to leverage good practices and new measures into national and regional innovation policies. Activities carried out within the project include an identification of all potential innovators in society, from school children to advanced research laboratories and from the curious human being to front-runners among innovative enterprises. Innovators of all levels will be brought together and public-private innovation partnerships will be promoted. The aim is to enable an exchange of experiences and attitudes towards creativity, promote new constellations of collaboration and enhance inventiveness within and across business sectors, scientific fields, education, public sectors and virtual communities.

Engineering Design and Product Development

Department of Management Engineering
Forsknings- og Innovationsstyrelsen

Antropologerne.com
Period: 21/09/2006 → 30/07/2008
Number of participants: 5

Innovation
Acronym: Innovation C.I.R.C.U.S.
Project ID: 80888
Project participant:
Borchsenius, Annette (Ekstern)
Project Manager, organisational:
Björklund, Eric (Ekstern)
McAloone, Tim C. (Intern)
Boelskifte, Per (Intern)
Alloy development for overlay welding in waste incineration plants

Manufacturing Engineering

Department of Mechanical Engineering
Department of Management Engineering
Period: 01/09/2006 → 31/08/2009
Number of participants: 1
Project ID: 80720
Project Manager, organisational:
Tiedje, Niels Skat (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Project

Bæredygtig produktion - vurdering af den sociale og miljømæssige dimension

Department of Management Engineering
Period: 01/09/2006 → 30/06/2010
Number of participants: 6
Phd Student:
Jørgensen, Andreas (Intern)
Supervisor:
Jørgensen, Michael Søgaard (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Olsen, Stig Irving (Intern)
BenoÎt, Catherine (Ekstern)
Griesshammer, Rainer (Ekstern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Amount: 2,000,000.00 Danish Kroner
Project

Diffusion of telecommunications services in a complex socio-economic context

Department of Management Engineering
Period: 01/09/2006 → 29/06/2011
Number of participants: 5
Phd Student:
Ismail, Abdullah (Intern)
Main Supervisor:
Clausen, Christian (Intern)
Examiner:
Røpke, Inge (Intern)
Falch, Morten (Intern)
Singhal, Arvind (Ekstern)

Financing sources
Innovation i nyere bæredygtigt byggeri

Section for Planning and Management of Building Processes

Department of Civil Engineering

Department of Management Engineering


Number of participants: 3

Project participant:
Elle, Morten (Intern)
Emmitt, Stephen (Intern)

Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)

Financing sources

Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 400,000.00 Danish Kroner

Testing, Modelling and Development of Tribological Systems for Metal Forming of Micro Components

Department of Management Engineering

Period: 01/09/2006 → 31/12/2007

Number of participants: 2

Phd Student:
Borrild, Morten Jerne (Intern)

Main Supervisor:
Bay, Niels Oluf (Intern)

Financing sources

Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Project: PhD

Transportation revenue management

The purpose of this research project is to develop new and improved optimization models and algorithms within the area of revenue management (RM) in transportation. The project is funded by the Danish Research Council for Technology and Production Sciences under research grant 274-06-0244. In this project we are concerned only with schedule-based transportation, i.e. transportation networks where service is available only at designated times. The transportation service is not available after its designated time and cannot be stored, i.e. the service is perishable. Another characteristic of the means of transportation we are considering is that the capacity is fixed, e.g. number of seats in an aircraft or number of slots in a container vessel. The breakthrough in RM came in the airline industry when it was recognized by an airline company that they produced seats at a marginal cost near zero because most of the costs of a flight are fixed. The objective of the transportation firm is therefore to minimize the amount of available capacity at the start of service. The capacity control problem is concerned with the optimal allocation of capacity to different classes of demand that occurs over time. A complicating factor related to the capacity control problem is the uncertainty of the demand forecasts. Therefore, the capacity control problem needs to be re-optimized when the forecasts are changed. It is critical that the optimization of the capacity control problem is computationally efficient in order to be implementable in practice. This project is focused on two areas of RM where there has been relatively little research, i.e. the problem of handling batch bookings and the multiple-resource capacity control problem. The purpose of this project is also to extend the RM theory and methodology to container liner shipping.

Department of Transport

Period: 01/09/2006 → 31/08/2009

Number of participants: 1

Acronym: TRM

Project ID: 95-35120

Project Manager, organisational:
Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,800,000.00 Danish Kroner

Project

Udvikling af produktionsnetværk - Strategisk simulering til støtte af innovation og drift

Department of Management Engineering
Period: 01/09/2006 → 20/12/2012
Number of participants: 6
Phd Student:
Hansen, Mette Sanne (Intern)
Supervisor:
Jacobsen, Peter (Intern)
Main Supervisor:
Rasmussen, Lauge Baungaard (Intern)
Examiner:
Rasmussen, Birgitte (Intern)
Danielsen, Oluf (Ekstern)
Smith, David Joseph (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

East - West project : Danish WP3 Report
The Danish parts of WP3 are to perform a pre-feasibility study, including urban planning, environmental impact and capacity issues, for: •Road and railway connections to the port of Esbjerg •A intermodal terminal at port of Esbjerg The main objective of the Danish part of WP3 is therefore to perform and report these Danish pre-feasibility studies. The secondary objective is to generate added value to the decision process associated with the pre-feasibility studies. This objective has been achieved by an innovative adaptation and application of cutting edge decision support systems to the pre-feasibility studies.

Department of Transport
University of Southern Denmark
Period: 01/08/2006 → 01/11/2006
Number of participants: 2
Composite model assessment
Project ID: 35119
Project participant:
Barfod, Michael Bruhn (Intern)
Project Manager, organisational:
Kronbak, Jacob (Ekstern)

Financing sources
Source: Forsk. EU - Andre EU-midler
Name of research programme: Forsk. EU - Andre EU-midler
Amount: 167,625.00 Danish Kroner

Security of Supply on the Electricity Market
Welfare prospects of improving the determination of aggregate level and allocation of security to different customers based on WTP

Department of Management Engineering
EA Energianalyse A/S
Modelling of Microstructure, Mechanical Properties and Structural Performance in Thin Walled Ductile Cast Iron

Ductile cast iron has good mechanical properties and low production cost and is therefore widely used as a construction material. Cast parts in ductile iron can however be improved further by optimisation with numerical modelling. This not only involves the casting process itself but also the subsequent mechanical performance during service. The casting process has a large influence on the finale mechanical properties and the numerical modelling of the solidification of ductile iron is therefore a key factor in the entire optimisation linking the process and the performance of the part. Solidification of ductile cast iron is very complex involving many different factors such as properties and chemistry of the melt and the heat flow from the casting into the mould. Concerning the heat flow an important factor is the thermal resistance between the casting and the mould, normally described by the heat transfer coefficient (HTC). The knowledge about the HTC is however very little, especially concerning thin walled castings. The aim of this project is to investigate the heat transfer from casting to mould experimental, with emphasis on the HTC. The results from the experimental work will be incorporated in an advanced numerical model of solidification of ductile cast. The output of the solidification simulation will be mechanical properties which can be used as input for the structural mechanical simulation of the casting part in the applied function.
Adfærdsmæssige og tekniske potentiale for energirigtig udvikling af husholdningers ICT løsninger

Department of Manufacturing Engineering

Department of Management Engineering
Period: 01/04/2006 → 01/09/2008
Number of participants: 1
Project Manager, organisational:
Røpke, Inge (Intern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Amount: 726,000.00 Danish Kroner

Interorganisational Knowledge Processis in Construction - Knowledge and Practice in Partnering

Department of Management Engineering
Period: 01/03/2006 → 24/03/2010
Number of participants: 7
Phd Student:
Gottlieb, Stefan Christoffer (Intern)
Supervisor:
Haugbølle, Kim (Intern)
Koch, Christian (Intern)
Main Supervisor:
Clausen, Christian (Intern)
Examiner:
Bonke, Sten (Intern)
Bang, Henrik Lindved (Ekstern)
Bresnen, Michael John (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet
Project: PhD

**Network Design, Scheduling and deployment Planning under Uncertainty in Shipping Applications**
Department of Transport
Period: 01/03/2006 → 30/06/2010
Number of participants: 6
Phd Student:
Andersen, Martin Wahl (Intern)
Supervisor:
Stidsen, Thomas Jacob Riis (Intern)
Main Supervisor:
Madsen, Oli B.G. (Intern)
Examiner:
Larsen, Jesper (Ekstern)
Hasle, Geir (Ekstern)
Lysgaard, Jens (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

**Nordic households and sustainable consumption - exploring the concept of leisure time activities**
Department of Manufacturing Engineering
Department of Management Engineering
Period: 01/03/2006 → 31/12/2006
Number of participants: 1
Project participant:
Røpke, Inge (Intern)

**Financing sources**
Source: Forsk. Andre offentlige og private - Nordiske
Name of research programme: Forsk. Andre offentlige og private - Nordiske
Amount: 50,000.00 Danish Kroner
Project

**Models and Algorithms for the Vehicle Routing Problem with Cross Docking**
Department of Management Engineering
Period: 01/02/2006 → 24/03/2010
Number of participants: 6
Phd Student:
Wen, Min (Intern)
Supervisor:
Clausen, Jens (Intern)
Main Supervisor:
Larsen, Jesper (Intern)
Examiner:
Larsen, Allan (Intern)
Hasle, Geir (Ekstern)
Nielsen, Jakob Birkedal (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Strategies for analysis, abatement and prevention of air pollution developed through interaction between research institutions and civil society
Department of Management Engineering
Period: 01/02/2006 → 21/12/2010
Number of participants: 7
Phd Student:
Brodersen, Søsser (Intern)
Supervisor:
Jensen, Torben Elgaard (Intern)
Pilegaard, Kim (Intern)
Main Supervisor:
Jørgensen, Michael Søgaard (Intern)
Examiner:
Lindegaard, Hanne (Intern)
Hagendijk, Robert Peter (Ekstern)
Irwin, Alan (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Risø (Løn)
Project: PhD

Workspace Design: Brugerorienteret design af arbejdspladser i produktionssystemer
Department of Management Engineering
Period: 01/02/2006 → 09/06/2010
Number of participants: 6
Phd Student:
Seim, Rikke (Intern)
Supervisor:
Andersen, Vibeke (Intern)
Main Supervisor:
Broberg, Ole (Intern)
Examiner:
Havn, Erling C. (Intern)
Bering, Ida Elisabeth (Ekstern)
Eklund, Jörgen (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Project: PhD

Copenhagen Congestion monitoring
The project develops methods to monitor the development of congestion in the Copenhagen Region by analysing data from a fleet of cars equipped with GPS. Project manager. Funded by the Municipality of Copenhagen.

Department of Transport
Period: 16/01/2006 → 31/12/2007
Number of participants: 1
Project Manager, organisational:
Nielsen, Otto Anker (Intern)
Financing sources
Source: Sam.arb.aftaler - Amter og kommuner
Name of research programme: Sam.arb.aftaler - Amter og kommuner
Amount: 50,000.00 Danish Kroner
Project

Substitution af tøndeformede blysynk
Department of Management Engineering
Linimatic A/S
Period: 08/01/2006 → 08/01/2007
Number of participants: 2
Project participant: Tiedje, Niels Skat (Intern)
Project Manager, organisational: Himmelstrup, Jacob (Ekstern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Forskningsprojekter - Miljø- og Energiministeriet
Amount: 1,000,000.00 Danish Kroner
Project

A Coordinated Action towards the promotion and consolidation of all RTD activities for large-scale integration of DER in the electricity market
FP6

The integration of DER in the European electricity networks has attracted attention of energy producers, network operators, policy makers and R&D community. In some countries it created a number of challenges for the electricity supply system creating barriers for further expansion of DER. Furthermore, there exists a lack of awareness and understanding of the possible benefits and scope of DER in the electricity system, while environmental goals and security of supply issues ask for solutions that DER could give in the future. The SOLID-DER Coordination Action will tackle the barriers for further integration of DER, overcoming the lack of awareness and fragmentation in EU R&D results by consolidating all European DER research activities. In particular awareness of DER solutions and benefits will be raised in the new Member States, thereby addressing the specific issues and barriers faced here. Consequently the key objectives of the project are: Identify and assess the critical developments, innovations and findings in meeting the R&D needs for large-scale integration of DER. It concerns developments in the field of legislation, regulation, DER support policies, market access, technical breakthroughs in DER supply and enabling technologies. To provide an assessment of costs/benefits and concepts of business models for DER and pro-active networks. Raising awareness of benefits of DER and organising dissemination of knowledge and capacity building in the new MS. The assessment and recommendations of RTD activities and its progress on national, regional, and EU levels will be reviewed and commented by the representatives of the electricity business community. This intensive dialogue will lead to an effective achievement of the overall EU energy policy goals and optimising the penetration of DER.

Department of Management Engineering
Risø National Laboratory for Sustainable Energy
ENVIROS
Siemens
DONG Energy A/S
Energy Research Centre of the Netherlands
Comillas University
Iberdrola
Lithuanian Energy Institute
Verbund Austrian Hydropower AG
Period: 01/01/2006 → 31/12/2008
Number of participants: 2
Renewable energy, Regulation, EU
Acronym: SOLID-DER
Environmental sustainability utilization of waste resources for energy production

Department of Environmental Engineering

Department of Management Engineering

Residual Resource Engineering

Aalborg University

Elsam A/S
Period: 01/01/2006 → 31/12/2008
Number of participants: 3
Acronym: ENSUWE
Project ID: 1200196

Project participant:
Münster, Marie (Intern)
Fruergaard, Thilde (Intern)

Financing sources
Source: Public research council
Name of research programme: Forskningstyrelsen – programkomiteen for energi og miljø
Amount: 4,700,000.00 Danish Kroner

Project

Innovative Joining Processes Applying Integrated Modelling

Advanced industrial product development is faced with steadily growing demands for joining new materials, often in dissimilar combinations, implying complicated joining problems. It is therefore imperative that manufacturing of joints in high tech products should be treated with scientific engineering methods. This is, however, seldom done to an extent justified by its importance. Although traditional arc welding processes have been subjected to numerical analysis of isolated problems such as temperature analysis, weld pool dynamics, microstructural evolution as well as transient and residual stress/strain and distortion analysis the idea of modeling with the aim of optimizing the entire process is still in its infancy state, and when it comes to more sophisticated processes like resistance welding (RW) and friction stir welding (FSW) even more basic numerical studies are in an early stage of development. Both of these processes need complex thermo-mechanical calculations, microstructural predictions as well as thorough analysis of large plastic deformations in order to predict weld strength and optimum welding parameters as well as final geometry. These problems are challenging and of multi-physics nature involving complex mechanisms comprising several cross-disciplinary areas such as materials science, thermodynamics, solid and fluid mechanics as well as process technology and applied numerical analysis. The objective of the present project is to develop advanced numerical models applicable for simulation of RW and FSW aiming at possible optimization of the entire processes. Focus will be set on overall numerical modelling strategies specific for
each of the two welding processes as well as more detailed investigations of microstructures, mechanical properties, strength and weld quality.

Department of Management Engineering

Department of Mechanical Engineering

Department of Mathematics

Period: 01/01/2006 → 31/12/2009
Number of participants: 5
Acronym: INNOJoint
Project ID: 80700
Project participant:
Bay, Niels Oluf (Intern)
Somers, Marcel A. J. (Intern)
Project Manager, organisational:
Hattel, Jesper Henri (Intern)
Bendsøe, Martin P. (Intern)
Tvergaard, Viggo (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 20,000,000.00 Danish Kroner

Kinetics of metal dusting corrosion of of Fe-Ni-Cr(-Al) alloys
There is a pursuit for maximum efficiency in steam-reforming technologies in the petrochemical industry and a rising interest in the Fischer-Tropsch gas-to-liquid (GTL) hydrocarbon processing technologies. These require higher carbon content and lower water vapour content in the syngas (CO/H2-based gas atmospheres). Fe-based (steel) and Ni-based high chromium alloys are widely applied as high temperature materials in the petrochemical industry. In the temperature range 450-850 °C all Fe-based and Ni-based metals in high temperature process equipment that get into contact with carbon-bearing gases, like syngas, are subjected to carburization, i.e. dissolution of carbon in the alloy and the development of carbides. Generally, in the petrochemical industry and, particularly, in the reforming units, such carburization may lead to a very aggressive corrosion phenomenon known as metal dusting (MD), also called catastrophic carburizing. During MD the protective chromium (and aluminum) oxide layer on the Fe-based and Ni-based alloys is attacked locally. The stochastic nature of MD has hitherto hindered a thorough investigation of the parameters influencing the kinetics of the (catastrophic) carburizing process and, thus, targeted optimization of the alloys’ compositions.

Department of Manufacturing Engineering

Department of Management Engineering

Haldor Topsoe AS
Period: 01/01/2006 → 31/12/2008
Number of participants: 3
Project participant:
Hummelshøj, Thomas Strabo (Intern)
Appel, Charlotte Clausen (Ekstern)
Project Manager, organisational:
Somers, Marcel A. J. (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,955,586.00 Danish Kroner

Phase stability of interstitial austenitic steel
The project is a combined experimental and theoretical approach to establish the basic thermodynamic data for ternary austenitic FeCrNi with a view to improve the stability of steels hardened by insertion of interstitial nitrogen and/or carbon.

Department of Physics

Department of Management Engineering
Center for Nanoteknologi
Period: 01/01/2006 → 31/07/2008
Number of participants: 2
Project ID: 20219
Project participant:
Somers, Marcel A. J. (Intern)
Project Manager, organisational:
Skriver, Hans Lomholt (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 2,954,947.00 Danish Kroner

Project Plasmonic optical sensors
Department of Manufacturing Engineering
Department of Management Engineering
Period: 01/01/2006 → 30/06/2009
Number of participants: 2
Project participant:
Islam, Aminul (Intern)
Project Manager, organisational:
Hansen, Hans Nørgaard (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 400,000.00 Danish Kroner

Project Quality and values in the job
Manufacturing Engineering
Department of Mechanical Engineering
Department of Management Engineering
Roskilde University
Skovtofte College
Period: 01/01/2006 → 31/12/2008
Number of participants: 3
Meaningful work, Developmental work, Employee participation, Service quality
Project participant:
Jørgensen, Michael Søgaard (Intern)
Bilfeldt, Annette (Ekstern)
Meyer-Johansen, Hanne (Ekstern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 0.00 Danish Kroner

Project Reader: New developments in ecological economics
Department of Management Engineering
Period: 01/01/2006 → 01/08/2007
Number of participants: 1
Project participant:
Reduction of energy consumption for basic ventilation in heavy process industry

Department of Management Engineering

Teknologisk Institut

Period: 01/01/2006 → 01/07/2007
Number of participants: 2
Project ID: 80596
Project participant:

Drivsholm, Christian (Ekstern)
Project Manager, organisational:

Tiedje, Niels Skat (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 1,000,000.00 Danish Kroner
Project

Value and User Orientation in Construction

Department of Management Engineering

Production and Service Management

Period: 01/01/2006 → 31/12/2006
Number of participants: 1
Project participant:

Kristiansen, Kristian (Intern)

Project


An important part of the cooperation within the IEA (International Energy Agency) is organised through national contributions to Implementation Agreements on energy technology and energy analyses. One of them is ETSAP (Energy Technology Systems Analysis Programme), started in 1976. Denmark has signed the agreement and contributed to some early annexes. This project is motivated by an invitation to participate in ETSAP Annex X, Global Energy Systems and Common Analyses: Climate friendly, Secure and Productive Energy Systems for the period 2005 to 2007. The main activity is semi-annual workshops focusing on presentations of model analyses and use of the ETSAP tools (the MARKAL/TIMES family of models). The project was also planned to benefit from the ED project NEEDS - New Energy Externalities Developments for Sustainability. ETSAP is contributing to a part of NEEDS that develops the TIMES model for 29 European countries with assessment of future technologies. An additional project Monitoring and Evaluation of the RES directives: implementation in EU and policy recommendations for 2020 (RES2020) under Intelligent Energy Europe was added, as well as the Danish Centre for Energy, Environment and Health (CEEH), starting from January 2007.

Department of Management Engineering

Period: 01/12/2005 → 31/12/2008
Number of participants: 1
Project participant:

Grohnheit, Poul Erik (Intern)

Project

Microelectrochemical Analysis of CMT

Department of Management Engineering

Period: 01/12/2005 → 01/06/2007
Number of participants: 1
Project Manager, organisational:
Ambat, Rajan (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 80.00 Danish Kroner

Application of passenger matrix estimation methods in the Copenhagen Rail system
The project aims at the full-scale estimation, calibration and implementation of methods that can estimate passenger travel data from counting and weighting trains. Project leader. Department of Mathematical Modelling at DTU and Rapidis ltd. were subcontractors. Funding: The Copenhagen Urban Rail Company.

Department of Transport
Number of participants: 2
Project ID: 35100

Project participant:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 231,500.00 Danish Kroner

Justering af bilmatricer til Ørestadens Trafikmodel (OTM)

Department of Transport
Period: 04/11/2005 → 31/03/2006
Number of participants: 6
Project ID: 35111

Project participant:
Rich, Jeppe (Intern)
Landex, Alex (Intern)
Zabic, Martina (Intern)
Hansen, Stephen (Intern)
Andersen, Jonas Lohmann Elkjær (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 130,000.00 Danish Kroner

Green Governance in Global Trade - project planning grant

Department of Manufacturing Engineering
Department of Management Engineering

Lund University
Period: 01/11/2005 → 01/04/2006
Number of participants: 1
Project Manager, organisational:
Wangel, Arne (Intern)

Financing sources
Source: Forsk. Andre offentlige og private - Nordiske
Waste prevention, waste policy and innovation

Department of Manufacturing Engineering
Department of Management Engineering
Period: 01/11/2005 → 30/08/2006
Number of participants: 6
Acronym: ESTO-WASTE
Project participant:
Jørgensen, Ulrik (Intern)
Jørgensen, Michael Søgaard (Intern)
Olsen, Stig Irving (Intern)
Lauridsen, Erik Hagelskjær (Intern)
Hauschild, Michael Zwicky (Intern)

Project Manager, organisational:
Knudsen, Hans Henrik (Intern)

Financing sources
Source: Forsk. EU - Andre EU-midler
Name of research programme: Forsk. EU - Andre EU-midler
Amount: 1,500,000.00 Danish Kroner

Godsmodeller for Ørestadsregionen

Administration

Department of Transport
Number of participants: 1
Project ID: 35110
Project Manager, organisational:
Overgård, Christian Hansen (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 1,500,000.00 Danish Kroner

Beslutningsstøtte til genopretning ved uregelmæssigheder i togdrift

Department of Management Engineering
Period: 01/10/2005 → 22/04/2009
Number of participants: 6
Phd Student:
Groth, Julie Jespersen (Intern)
Supervisor:
Clausen, Jens (Intern)
Main Supervisor:
Larsen, Jesper (Intern)
Examiner:
Stidsen, Thomas Jacob Riis (Intern)
Abbink, Erwin Jan W. (Ekstern)
Liebchen, Christian (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: **ErhvervsPhD-ordningen VTU**
Project: PhD

**Center for metaliske mikroprodukter**

Manufacturing Engineering

Department of Mechanical Engineering

Department of Management Engineering

Period: 01/10/2005 → 30/09/2010

Number of participants: 3

Project ID: 80589

Project participant:

Eriksen, Rasmus Solmer (Intern)

Project Manager, organisational:

Hansen, Hans Nørgaard (Intern)

Bay, Niels Oluf (Intern)

**Financing sources**

Source: Forskningsprojekter - Andre ministerier og styrelser

Name of research programme: Forskningsprojekter - Andre ministerier og styrelser

Amount: 6,078,000.00 Danish Kroner

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**Scenarios for transport in Denmark – 2030**

The project develops and discusses different scenarios for the development in the transport sector in Denmark – 2030.

Project leader: Jens Rørbech consult contributed to the project as well. Funding: the weekly engineering journal.

**Administration**

Department of Transport

Period: 01/10/2005 → 01/07/2006

Number of participants: 3

Project participant:

Rørbech, Jens (Intern)

Landex, Alex (Intern)

Project Manager, organisational:

Nielsen, Otto Anker (Intern)

**Financing sources**

Source: Sam.arb.aftaler, Private danske - Andre virksomheder

Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder

Amount: 75,000.00 Danish Kroner

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**Automated corrosion sensors as on-line real time process control tools**

The project is based on need for small, simple, and inexpensive device for monitoring and evaluating corrosion. The information on actual corrosivity of the environment is crucial for effective corrosion protection. Long-term monitoring of the corrosivity can help in better understanding of fundamentals of corrosion processes, as well as in risk assessment.

Basically the most innovative objectives of the project consist of (1) high sensitivity of the sensor device, i.e. short time to response; (2) miniature and independent character of the device, which can be placed virtually anywhere and monitor the aggressiveness of the environment in long run; (3) simple operation demanding no special knowledge of the personnel; (4) possibility of on-line monitoring of corrosion risks at distant places due to GSM reading. The project brings together three SMEs from France, Denmark and Czech republic. All of them are well established in their fields, i.e. metal galvanizing, electronics and software development, and corrosion monitoring in soils. However, none of the companies is able to activate required financial and human resources to develop the highly-innovative product as it includes research in several distant domains, extensive testing and characterization, and demanding market analysis and dissemination process. An important part of research and development will be carried out by the R&D partners. The project will help the SMEs to put together their knowledge and potential in their precisely defined areas of excellence. Metal sensors for the device will be produced in Czech republic, the electronics in France and the application and marketing will be provided by the Danish and French companies. The high level of transnational cooperation will improve competitiveness of all the SME partners. It is expected that this cooperation is going to continue in further projects. Corrosion rate of technically important metals and their alloys, as well as the character of the corrosion attack, depends largely on the properties of the environment. In atmospheric exposure conditions, temperature, relative humidity, concentration of contaminants such as chloride, sulfur...
dioxide, nitric compounds and others, precipitation and cyclic changes of the parameters affect the corrosion rate. In aqueous media, presence of other chemicals, flow rate, concentration of oxygen and other parameters affect it. In general, it is very difficult or even impossible to predict corrosion rate of metals with sufficient accuracy. Since the knowledge on the rate or form of corrosion process in potentially hazardous environment is necessary for safe and reliable operation of industrial facilities, protection of cultural heritage, transportation and other applications, it is desirable to collect and on-line evaluate data on the actual danger of corrosion damage. This information can be a part of decision-making processes leading to appropriate measures to minimize corrosion damage. In principle, there are wide range of methods for corrosion monitoring based either on physical or electrochemical principles. However, the monitoring techniques have often one or more of the following drawbacks: Long time to response (i.e. insufficient sensitivity), ambiguous response, non-universality, user-unfriendliness, big size, and high price. The aim of this project is to develop a small, independently-working sensor device for monitoring of corrosion. The sensor device can work independently or it can be controlled by a distant operator. To fulfill different material requirements, the sensor device will be developed with sensors from wider range of metals. The main principal areas of application of the sensor device are: industry, transportation, electronic equipment, and cultural heritage. It can be used for rapid identification of potentially dangerous conditions, for mapping of aggressiveness of environment, or as a device checking correct function of corrosion protection systems. The advantage is that no special knowledge is necessary for operating of the device. Moreover, since it can be operated from a distant place, data evaluation can be separated from data acquisition.

Department of Management Engineering
Institut de la Corrosion
MetriCorr ApS
Institute of Chemical Technology
Period: 01/09/2005 → 01/08/2007
Number of participants: 7
Project participant:
Albæk, Michael (Intern)
Ambat, Rajan (Intern)
Hansen, Mikkel Østergaard (Intern)
Tomas Prosek (Ekstern)
Lars Vendelbo Nielsen (Ekstern)
Milan Kouril (Ekstern)
Project Manager, organisational:
Hilbert, Lisbeth Rischel (Intern)

Financing sources
Source: Forsk. EU - Andre EU-midler
Name of research programme: Ukendt
Amount: 1,200,000.00 Danish Kroner
Project

Research in System Deliveries within Construction
Manufacturing Engineering
Department of Mechanical Engineering
Department of Management Engineering
Byggeriets Innovation
Period: 01/09/2005 → 01/03/2006
Number of participants: 3
Project participant:
Tølle, Martin (Intern)
Thomassen, Mikkel (Ekstern)
Project Manager, organisational:
Hvam, Lars (Intern)

Financing sources
Source: Forsk. Private danske - Fonde
Name of research programme: Forsk. Private danske - Fonde
Amount: 800,000.00 Danish Kroner
Project
Simultaneous Optimisation of Operating Costs and Passenger Service in Public Transit

In the Greater Copenhagen area approximately 200,000 hours are lost every day when passengers are waiting for a connecting bus or train. Hence, an enormous socio-economic potential lies within the development of new methods that can be used to generate timetables which have better temporal correspondences. Naturally, this can be achieved by assigning more resources to cover the timetables. However, the public transit companies are faced with administrative claims for cutting operating costs which renders improvements of the service intractable. Hence, efficient and near-optimal use of the resources is of paramount importance for the public transit companies.

The project addresses the multiple objective planning problem of generating timetables that on the one side is economically feasible for the transport companies and on the other hand also offers high-quality service to the passengers by minimising the unproductive time spent on waiting between one or more shifts.

Department of Transport
Period: 01/09/2005 → 31/05/2008
Number of participants: 4
Project participant:
Larsen, Allan (Intern)
Pedersen, Michael Berliner (Intern)
Petersen, Bjørn (Intern)

Project Manager, organisational:
Madsen, Oli B.G. (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 840,000.00 Danish Kroner

Testning af alternative smøremidler til koldflydepresning

Department of Manufacturing Engineering
Department of Management Engineering
DFT - Dansk Flydepresse Teknologi A/S
Period: 01/09/2005 → 21/08/2008
Number of participants: 2
Contact person:
Sørensen, Mogens (Ekstern)

Project Manager, organisational:
Bay, Niels Oluf (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 500,000.00 Danish Kroner

The Role of Information and Communication Technologies in the New International Division of Labour (The Case of Danish Companies)

Department of Management Engineering
Period: 01/09/2005 → 06/03/2009
Number of participants: 7
Phd Student:
Perunovic, Zoran (Intern)
Supervisor:
Pedersen, Jørgen Lindgaard (Intern)
Williams, Howard Peter (Ekstern)
Main Supervisor:
Christoffersen, Mads (Intern)
Examiner:
Salomo, Søren (Intern)
Training and Mentoring of Science Shops (TRAMS)

TRAMS will develop specific structural services for the International Science Shop Network Living Knowledge. In this way the co-ordination actions in TRAMS will contribute to the goals of the network. It will be an important step for the future funding of the network. The EC project ISSNET shows there is a growing request for tools and support to get started with new science shop activities in many regions of Europe. Therefore it is foreseen that the training and mentoring activities that will be developed in TRAMS will fulfill an expressed need, and provide a benefit for civil society. After the pilot activities and development of materials in TRAMS these tools for support will be made available for the members of the network at low costs. This will assure the future use of the deliverables of TRAMS. The preliminary results of ISSNET make clear within the network there is a demand for these activities. TRAMS is an indispensable milestone in the networking of science shops. Development of innovative practice in science shops will be encouraged, through a customised training programme toolbox and appropriate partnering and exchange (mentoring) among members of Living Knowledge. TRAMS will focus on both sides (users and suppliers) in training and mentoring, because both groups are important stakeholders in the project. This will allow the project to have a direct input on the needs for training and mentoring and on the available tools and expertise. The users in TRAMS are the pilot group of the mentoring and training activities. All members of Living Knowledge can participate in activities of TRAMS (e.g. workshops) and make use of the results and materials of TRAMS. The workpackages of TRAMS will focus on 1) Mentoring, 2) Training materials 3) E-modules, 4) Dissemination of results. TRAMS will co-ordinate co-operation with the members of the International Science Shop Network. It will build on the results and recommendations of previous EC projects.
Induction Assisted Welding Technologies in Steel Utilisation

Coming from automotive applications, high strength steel grades to be applied in lightweight construction are more and more required in many industrial sectors as construction, agricultural machinery or shipbuilding industry. Beside this weight saving aspects, demands like a high wear resistance combined with high toughness at a wide temperature range are important for these applications. However, fundamental metallurgical facts cause these steels to be relatively difficult to weld. As modern high strength steels are manufactured using more and more complex thermo mechanical treatment techniques, a loss of the base material properties after welding is identified to be the core of these problems. Moreover, these steel grades contain a relatively high amount of carbon that leads to significantly increased hardness and cold crack occurrence caused by martensite formation in the weld. Future development of steels with even higher carbon content will accentuate this problem. The existing limitations as insufficient fatigue strength can be overcome by the use of appropriate welding methods as laser GMA hybrid welding combined with induction heating. Thus, an adaption of weld seam properties to the base materials properties will be enabled. Benefits expected from the research: • Detailed, application-related understanding of the interaction between induction and welding processes • Concrete knowledge about the metallurgical and mechanical weld seam properties of induction assisted welded steel • Increased use of high strength steels to gain benefit of both cost saving and raw material saving aspects Main goals of the project: • Enable an increased use of high strength steels for a number new industrial applications • Improvement of weld performance and reduction of rework • Providing new induction assisted welding processes suitable for mass production

Department of Manufacturing Engineering
Department of Management Engineering
Laser Zentrum Hannover E.V.
Max Planck Institute
Fraunhofer Gesellschaft
Schweißtechnische Lehr- und Versuchsanstalt Halle GmbH
University of Hannover
Onderzoeks Centrum voor Aanwending van Staal, N.V.
Salzgitter Mannesmann Forschung GmbH
Centro Sviluppo Materiali S.p.A. (CSM)
CNH Belgium N.V.
Period: 01/07/2005 → 30/06/2008
Number of participants: 10
Acronym: INDUCWELD
Project Manager, organisational:
Olsen, Flemming Ove (Intern)
Meier, Olivier (Ekstern)
Pyzalla, Anke (Ekstern)
Standfuss, Jens (Ekstern)
Bruns, Claas (Ekstern)
Nacke, Bernard (Ekstern)
Goudemez, Jacques (Ekstern)
Höfemann, Matthias (Ekstern)
Matera, Susanna (Ekstern)
Lefebvre, Luc (Ekstern)

Financing sources
Source: Forsk. EU - Andre EU-midler
Name of research programme: Forsk. EU - Andre EU-midler
Amount: 527,453.00 Danish Kroner

Innovation and Domestic Multinationals (DOMUS)
The overall aim of the DOMUS project is to study the role of large domestic multinationals (domus) in the national innovation system (NIS). By domus is meant firms with business units or firms in other countries but with headquarters in the relevant Nordic country. Domus play an important role as competence nodes and gravitation centres, and are of great importance for the innovative capabilities of customers and suppliers including SMEs and for competence development in knowledge institutions including cooperating institutes and universities. The aim is to map the effects such companies have on the overall capabilities of NIS. The project will also investigate the effects a multinational presence has on the home activities of domus. It is for example important to find out the key factors that influence the domus’localisation
Strategic Transport Management in the Øresund region

Strategic Transport Management in the Øresund region, STMØ, is a project conducted in co-operation between Malmö Högskola, Danmarks Tekniske Universitet, Københavns Handelshøjskole, Sjöfartsverket in Sweden, Yrkeshögskolan in Helsingborg, Øresund Logistics, Landskrona kommun, Øresundsuniversitetet, Malmö Stad, Københavns Kommune and Region Skåne. One aim of the project is to develop a new scientific field, rooted in the Øresund region, which will be able to deal with questions associated to the interaction between traffic related consequences and development of society. At the same time the project seeks to develop an interregional master education, located at Øresundsuniversitetet, which will provide students, business, organisations and authorities competences to make optimised and valid solutions for Transport Management. A reason for creating a new education is the business desire to save costs and increase competition on production, trade, logistic and transport and thereby optimise the production- and transport chains. Another main focus is to try to define the increasing need for transportation, due to global, regional and local development and describe how this can be combined with a fair development of society. Several areas of importance has been identified and grouped as economic-, legal-, structural-, functional-, environmental- and technical matters. These matters need to be discussed and integrated in order to define and overcome possible barriers for an optimised and valid transport development. Thus STMØ aims at analysing the specific education needs related to the above mentioned matters, and based on the analysis creating the master education of Strategic Transport Management in such a way that it will be compatible with other educations already located in the Øresund region.
SPACES-workshops: cipu
Department of Mechanical Engineering
Department of Management Engineering
Period: 28/06/2005 → 01/07/2008
Number of participants: 1
Project ID: 75487
Project Manager, organisational:
McAloone, Tim C. (Intern)

Financing sources
Source: [Ordinær drift UK 10]
Name of research programme: [Ordinær drift UK 10]

Traffic Plan for Greenland: Decision Support Tool TGB
Department of Transport
Period: 06/06/2005 → 31/12/2005
Number of participants: 8
Acronym: TGB
Project ID: 35105
Project participant:
Jensen, Anders Vestergaard (Intern)
Salling, Kim Bang (Intern)
Nielsen, Otto Anker (Intern)
Hansen, Stephen (Intern)
Larsen, Allan (Intern)
Knudsen, Mette Aagaard (Intern)
Project Manager, organisational:
Leleur, Steen (Intern)
Rich, Jeppe (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 1,500,000.00 Danish Kroner

Aggregated roadpricing and speed-calculations
The project aggregated average speeds in large zones with and with out road pricing as input to an economic analyses of roadpricing. Funding (and use of the traffic results); the Danish Economic Council.

Department of Transport
Period: 01/06/2005 → 01/06/2006
Number of participants: 1
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 25,000.00 Danish Kroner

Indlejret produktkonfiguration hos Grundfos Strukturering af produktviden
Department of Management Engineering
Period: 01/06/2005 → 31/10/2008
Number of participants: 4
Phd Student:
Oddsson, Gudmundur Valur (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Mortensen, Niels Henrik (Intern)
Malmqvist, Johan (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Workspace Design
Department of Management Engineering
Teknologisk Institut
Center for Designforskning
CRECEA A/S
Period: 01/06/2005 → 01/05/2008
Number of participants: 6
Project participant:
Andersen, Vibeke (Intern)
Pedersen, Merete (Intern)
Merete Nørby (Ekstern)
Thomas Binder (Ekstern)
Tove Pedersen (Ekstern)
Project Manager, organisational:
Broberg, Ole (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 3,500,000.00 Danish Kroner

Relations
Activities:
Arbejdsmiljøakademiet
Project

Foresight for Innovators
Department of Management Engineering
Period: 01/05/2005 → 02/03/2011
Number of participants: 6
Phd Student:
Munnecke, Max (Intern)
Supervisor:
Jørgensen, Ulrik (Intern)
Main Supervisor:
Lenau, Torben Anker (Intern)
Examiner:
McAloone, Tim C. (Intern)
Hekkert, Paul (Ekstern)
Morelli, Nicola (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lænnet stipendie
**Modellering af strategier til service orienteret produktudvikling**

Department of Management Engineering  
Period: 01/05/2005 → 30/06/2010  
Number of participants: 6  
Phd Student:  
Tan, Adrian Ronald (Intern)  
Supervisor:  
Andreasen, Mogens Myrup (Intern)  
Main Supervisor:  
McAlone, Tim C. (Intern)  
Examiner:  
Lenau, Torben Anker (Intern)  
McMahon, Christopher Alan (Ekstern)  
Weber, Christian (Ekstern)

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Institut/centerfinansieret  
Project: PhD

**Opdatering af turmatricer og Ørestadens Trafik Model (OTM)**

Department of Transport  
Period: 16/03/2005 → 31/10/2005  
Number of participants: 6  
Project ID: 35104  
Project participant:  
Rich, Jeppe (Intern)  
Landex, Alex (Intern)  
Zabic, Martina (Intern)  
Hansen, Stephen (Intern)  
Andersen, Jonas Lohmann Elkjær (Intern)  
Project Manager, organisational:  
Nielsen, Otto Anker (Intern)

**Financing sources**  
Source: Sam.arb.aftaler, Private danske - Andre virksomheder  
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder  
Amount: 630,000.00 Danish Kroner  
Project

**Decision Support for Planning of Multi-modal Transportation with Multiple Objectives**

Department of Transport  
Period: 01/03/2005 → 02/12/2009  
Number of participants: 6  
Phd Student:  
Petersen, Hanne Løhmann (Intern)  
Supervisor:  
Clausen, Jens (Intern)  
Main Supervisor:  
Madsen, Oli B.G. (Intern)  
Examiner:  
Larsen, Jesper (Ekstern)  
Laporte, Gilbert (Ekstern)  
Lysgaard, Jens (Ekstern)
Entrepreneurial Centre
Center for entrepreneurship, offering physical facilities, consultancy and education - to students and researchers at Technical University of Denmark

Department of Management Engineering
Period: 01/03/2005 → 01/12/2007
Number of participants: 1
Project Manager, organisational:
Heebøll, John (Intern)

Establishment of Nordic Laser Hybrid Welding Relationships
A very essential basis for future maintaining and improvement of the Scandinavian level of ‘living standards’ is a high employment rate in combination with the production and export of high value / high quality products / components. The proposed project clearly supports this situation by networking / promoting new technology for improving productivity and product quality into a traditional materials manufacturing industrial sector, comprising of a large number of SME companies. Advanced fully automated processes as e.g. laser hybrid welding will become an important player in this field in the future. The project is partly sponsored by Nordic Innovation Centre.

Department of Manufacturing Engineering
Department of Management Engineering
FORCE Technology
Luleå University of Technology
Lappeenranta University of Technology
SINTEF
Technological Institute of Iceland
SSAB Tunnplat AB
ESAB AB
Vitec AS
Period: 01/03/2005 → 28/02/2008
Number of participants: 10
Acronym: NORHYB
Project participant:
Nielsen, Jakob Skov (Intern)
Project Manager, organisational:
Olsen, Flemming Ove (Intern)
Nielsen, Steen Erik (Ekstern)
Kaplan, Alexander (Ekstern)
Kujanpää, Veli (Ekstern)
Fostervoll, Hans (Ekstern)
Ambjörnsson, Adalstein (Ekstern)
Nielsson, Tony (Ekstern)
Tolling, Johan (Ekstern)
Bjørnbakk, Bjarne (Ekstern)

Financing sources
Source: Forsk. Andre offentlige og private - Nordiske
Name of research programme: Forsk. Andre offentlige og private - Nordiske
Amount: 784,352.00 Danish Kroner

Indlejret konfigurering: Modellering af produktfamilier og versionsstyring
Department of Management Engineering
Period: 01/03/2005 → 05/05/2010
Number of participants: 4
Phd Student: Christensen, Tim Teglgaard (Intern)
Main Supervisor: Hvam, Lars (Intern)
Examiner: Mortensen, Niels Henrik (Intern)
Jensen, Lars Jepsen (Ekstern)

Financing sources
Source: Internal funding (public)

Name of research programme: Forskningsrådsfinansiering
Project: PhD

Operationsanalyse i jernbanedrift
Department of Management Engineering
Period: 01/02/2005 → 21/10/2009
Number of participants: 4
Phd Student: Rezanova, Natalia Jurjevna (Intern)
Main Supervisor: Clausen, Jens (Intern)
Examiner: Pisinger, David (Intern)
Huisman, Dennis (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Project: PhD

Training and Mentoring of Science Shops
Department of Management Engineering
Period: 01/02/2005 → 01/08/2008
Number of participants: 1
Science shop, Mentoring
Acronym: TRAMS
Project participant: Jørgensen, Michael Søgaard (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 150,000.00 Danish Kroner
Project:

Udvikling af en metodisk tilgang til skabelse af bæredygtige produkt/service-systemer
Department of Management Engineering
Period: 01/02/2005 → 02/09/2009
Number of participants: 5
Phd Student:
Atmospheric Composition Change: an European Network (ACCENT)

Changes in atmospheric composition directly affect many aspects of life, determining climate, air quality and atmospheric inputs to ecosystems. In turn, these changes affect the fundamental necessities for human existence: human health, food production, ecosystem health and water. Atmospheric composition change research is therefore fundamental for the future orientation of Europe’s Sustainable Development strategy. The overall goals of ACCENT are to promote a common European strategy for research on atmospheric composition change, to develop and maintain durable means of communication and collaboration within the European scientific community, to facilitate this research and to optimise two-way interactions with policy-makers and the general public. ACCENT will establish Europe as an international leader in atmospheric composition change research, able to steer research agendas through its involvement in major international programmes. ACCENT furthermore aims to become the authoritative voice in Europe on issues dealing with atmospheric composition change and sustainability. The ACCENT joint research programme focuses on aerosols, biosphere-atmosphere interaction and transport and transformation of pollutants and it also looks for new partnership in economic and Earth System analysis. Integration will be achieved by creating common facilities and activities including: a dedicated interactive web portal, models, data-bases, measurement platforms, training and education opportunities, quality
assurance procedures and facilities, integrated assessment and synthesis of scientific results and an interface with the
general public. The excellence and the commitment of the ACCENT Partnership guarantee an effective and durable
integration of the European atmospheric composition change research and that it becomes a pillar of the European
Research Area. The activities the Science Shop at DTU is involved focus on *To set up a structural two-way interaction
between ACCENT research and policy-making in Europe. *To create a platform for dialogue between ACCENT and the
general public, including NGOs.

Department of Management Engineering
Climate Change Unit, Institute
Period: 01/01/2005 → 01/12/2008
Number of participants: 3
Project participant:
Brodersen, Søsser (Intern)
Frank Raes (Ekstern)
Project Manager, organisational:
Jørgensen, Michael Sagaard (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Uknendt
Amount: 25,000.00 Danish Kroner

Danske erfaringer med bæredygtigt forbrug
Department of Management Engineering
Period: 01/01/2005 → 01/12/2006
Number of participants: 1
Project Manager, organisational:
Røpke, Inge (Intern)

Financing sources
Source: [Ordinær drift UK 10]
Name of research programme: [Ordinær drift UK 10]
Amount: 20,000.00 Danish Kroner

Edition of Special Issue of Ecological Economics: Migration, globalization and the environment
Department of Manufacturing Engineering
Department of Management Engineering
Period: 01/01/2005 → 01/09/2006
Number of participants: 1
Project participant:
Røpke, Inge (Intern)

Financing sources
Source: [Ordinær drift UK 10]
Name of research programme: [Ordinær drift UK 10]
Amount: 10,000.00 Danish Kroner

Fremtidens arbejdsmiljø og øje på arbejdsmiljøreformen
Department of Manufacturing Engineering
Department of Management Engineering
Arbejdsmiljøinstituttet
Period: 01/01/2005 → 01/05/2008
Number of participants: 6
Project ID: 80557
Project participant:
Møller, Niels (Intern)
Jensen, Per Langaa (Intern)
Broberg, Ole (Intern)
Hasle, Peter (Ekstern)
Sørensen, Ole Henning (Ekstern)
Project Manager, organisational:
Andersen, Vibeke (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 1,317,600.00 Danish Kroner

Indlejret produktkonfigurering (Embedded product configuration)
Department of Management Engineering
Period: 01/01/2005 → 04/07/2008
Number of participants: 4
Phd Student:
Haug, Anders (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Jensen, Lars Jepsen (Ekstern)
Hildre, Hans Petter (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Reduced energy consumption for basis ventilation in heavy process industry
Many process industries use extensive, often over dimensioned, ventilation systems to provide a proper working environment. It is the aim of the project to develop methods to make ventilation systems that reduce the over-all need for ventilation so that the energy consumption for ventilation is kept at a minimum, while at the same time securing a sound working environment.

Department of Management Engineering
Period: 01/01/2005 → 01/12/2006
Number of participants: 1
Project Manager, organisational:
Tiedje, Niels Skat (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 2,156.00 Danish Kroner

Safety in design
The project examines how it is possible to include safety in the design of production lines.

Department of Management Engineering
Rise National Laboratory for Sustainable Energy
Arbejdsmiljøinstituttet
Period: 01/01/2005 → 01/07/2007
Number of participants: 5
Project participant:
Broberg, Ole (Intern)
Selective micro metallization of polymers

Department of Management Engineering
Period: 01/01/2005 → 30/06/2009
Number of participants: 5
Project participant:
Tang, Peter Torben (Intern)
Islam, Aminul (Intern)
Tosello, Guido (Intern)
Kjær, Erik Michael (Intern)
Project Manager, organisational:
Hansen, Hans Nørgaard (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 2,800,000.00 Danish Kroner

Teknologivurdering i kædeperspektiv - En vurdering af introduktion af genetisk modificerede (GM) afgrøder i EU

Department of Management Engineering
Period: 01/01/2005 → 31/10/2005
Number of participants: 3
Phd Student:
Sandegaard, Janus Daniel Weinreich (Intern)
Supervisor:
Gylling, Morten (Ekstern)
Main Supervisor:
Pedersen, Jørgen Lindgaard (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Ansat eksternt
Project: PhD

The Reverse and Environmental Logistics

Department of Management Engineering
Period: 01/01/2005 → 29/05/2008
Number of participants: 5
Phd Student:
Gobbi, Chiara (Intern)
Main Supervisor:
Jensen, Per Langaa (Intern)
Examiner:
Grunow, Martin (Intern)
Cagno, Enrico (Ekstern)
Johansen, John (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Sustainable development in Malaysia with focus on modelling and policy design
DANIDA project for sustainable development in Malaysia with focus on modelling and policy design within the economic planning Ministry and focusing on capacity building. Several courses on applied modelling and policy evaluation were conducted.

Department of Management Engineering

NIRAS A/S

Government of Malaysia
Period: 01/12/2004 → 28/02/2007
Number of participants: 1
Energy system, Energy modelling
Project participant:
Klinge Jacobsen, Henrik (Intern)

Vurdering af kørselsafgifter i København

Administration

Department of Transport
Period: 26/11/2004 → 31/07/2005
Number of participants: 6
Project ID: 35101
Project participant:
Landex, Alex (Intern)
Zabic, Martina (Intern)
Hansen, Stephen (Intern)
Rich, Jeppe (Intern)
Andersen, Jonas Lohmann Elkjær (Intern)
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 800,000.00 Danish Kroner
Project

Micro electrochemical set up for local corrosion and electrochemical characterisation
High performance demand for several engineering alloys and components, and miniaturization of electronics and development of MEMS requires better understanding of local corrosion characteristics frequently down to μm scale. This is because in metallic materials corrosion is a sensitive function of microstructure, in particular the local electrochemical activities of several microstructural heterogeneities such as second phase particles and grain boundaries. Corrosion of microelectronics circuits and MEMs is also a recent problem, which demands measurement resolution down to few microns as the components are extremely small, and measurement needs to be carried out without damaging the entire component. These limitations can be overcome by the use of so called micro electrochemical technique, which in various forms are being used by few investigators. A popular idea involves the use of a pipette connected to a system to control the solution flow at the tip. Through addition of reference and counter electrodes, the pipette system becomes a microscopic electrochemical cell, which can then be used with high precision to determine the electrochemical characteristics of the microstructural region of interest. The resolution of the technique is determined by the size of the pipette tip. Although this approach of measuring local electrochemical activity is attracting corrosion investigation, the equipment is not available commercially. This project aims to develop such a micro electrochemical set up at the division of Materials and process Technology at DTU.

Department of Management Engineering
Micro Product Development

The current project deals with long-term strategies for microproducts and integrated microproduct development. It is the aim of the work to develop: *Principles and methodologies for micro product development that systematically address the issues of diagnosis, feasibility investigation and conceptualisation of micro products based on product visions and technological possibilities in manufacturing. *Principles and methodologies for micro product design including modelling and optimisation of structures and manufacturing methods. Incorporation of packaging and assembly in the product development and design stage will be an important part of this objective.

Skin-pass rolling

Skin-pass rolling is the final forming step of the production of cold rolled steel sheet performed to avoid Lüder band formation, ensure required tolerances and tailored surface texture. The process has quite different parameter settings than conventional plate rolling due to small reductions (app. 1%), large contact length compared to the sheet thickness and large roll radius compared to the contact length. Furthermore, skin-pass rolling is usually performed under dry friction conditions, which lead to high friction between the material and the work rolls causing severe inhomogeneous deformation. Skin-pass rolling has great influence on mechanical material properties and resulting dimensional tolerances as well as resulting surface topography of the cold rolled sheets, which are tailored to meet stringent customer requirements for subsequent sheet forming applications. In spite of the large influence on final properties the skin-pass rolling process has not been subject to much fundamental research. The lecture describes a two years study on the subject carried out at IPL-DTU together with Professor Niels Bay. By elasto-plastic FEM analysis skin-pass rolling has been modelled showing the deformation to be highly inhomogeneous. An extended sticking region in the roll gap is determined together with the boundary between the sticking and the sliding region, where heavy plastic deformation is concentrated in the surface. The location of the transition between the sticking and the sliding region is strongly influenced by the coefficient of friction. The influence of process parameters such as friction, reduction and texture of roll surface on the resulting texture of the rolled plate is shown quantitatively. The numerical predictions are shown to be in good accordance with experimental analysis.

System products in the Building Industry

The project aims at defining the concept systems products in the building industry by use of examples from the business industry and related industries.
Department of Management Engineering  
Period: 01/11/2004 → 01/04/2005  
Number of participants: 2  
Project participant:  
Tølle, Martin (Intern)  
Project Manager, organisational:  
Hvam, Lars (Intern)  

Financing sources  
Source: Udenfor rammen  
Name of research programme: Ukendt  
Amount: 200,000.00 Danish Kroner  

4M  
4M is a European Network of Excellence (Multi Material Micro Manufacture)  

Department of Management Engineering  
Period: 01/10/2004 → 30/06/2009  
Number of participants: 6  
Micro- and NanoManufacturing  
Project participant:  
Bissacco, Giuliano (Intern)  
Tang, Peter Torben (Intern)  
De Grave, Arnaud (Intern)  
Eriksson, Torbjörn Gerhard (Intern)  
Tosello, Guido (Intern)  
Project Manager, organisational:  
Hansen, Hans Nørgaard (Intern)  

Financing sources  
Source: Udenfor rammen  
Name of research programme: Ukendt  
Amount: 500,000.00 Danish Kroner  

Establishing SCC test facility with micro electrochemical attachment and in situ high resolution visualization system  
In metallic materials, corrosion and stress corrosion is a sensitive function of microstructure, in particular the local electrochemical activities of several microstructural heterogeneities such as second phase particles and grain boundaries. The microstructural heterogeneities could act as a local corrosion site, which under stressed condition often develops into a stress corrosion crack. On the other hand in engineering components, structural heterogeneities of a higher scale could be produced by joining and processing techniques such as welding (eg. heat affected zone and nugget), cutting and machining operations; all have tremendous influence on corrosion and stress corrosion. In all the above cases, in-situ visualization of local corrosion / stress corrosion process in solution using a high resolution video microscope system with a wide range of magnifying capability could provide significant information on how the various microstructural factors controlling the corrosion performance of engineering materials. A typical example is the in-situ visualization of initiation of stress corrosion cracks adjacent to intermetallic particles in aluminium alloys assisted by the local corrosion processes. This project aims to develop a SCC test facility attached with micro electrochemical set up for fine scale electrochemical measurements and a high resolution visualization system for viewing the corrosion/SCC in-situ.  

Department of Management Engineering  
Period: 01/10/2004 → 01/10/2005  
Number of participants: 1  
Project Manager, organisational:  
Ambat, Rajan (Intern)  

Financing sources  
Source: [Ordinær drift UK 10]  
Name of research programme: Ukendt  
Amount: 100,000.00 Danish Kroner  

Optimal råvareanvendelse og ordreafvikling på svineslagterier

Department of Management Engineering
Period: 01/10/2004 → 24/09/2008
Number of participants: 7
Phd Student:
Kjaersgaard, Niels Christian (Intern)
Supervisor:
Hagdrup, Claus (Ekstern)
Jacobsen, Peter (Intern)
Main Supervisor:
Clausen, Jens (Intern)
 Examiner:
Juel, Henrik (Intern)
Rasmussen, Svend (Ekstern)
vander Betteray, Klemens (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Marie Currie Joint European transport Research network (JET)
The proposed network will arrange a series of seminars and Ph.D.-schools within transport modelling and optimisation. Members are – among others – TØI, SINTEF, MOLDE, Linköping, KTH, LTH, ITS Leeds, Imperial College London, ETH Zurich, IDSIA Lugano, Univ. of Rome, Reggio Calabria, Brescia, TU Delft, Eindhoven Tech. Univ., TRAIL, National Tech. Univ. of Athens, Univ. of Hamburg, RWTH Aachen. These are among the leading universities in transport within Europe. CTT is leading partner. The network is planned to be jointly chaired by Oli B.G. Madsen and Otto Anker Nielsen. Jeppe Husted Rich is project leader. Funds for application (JET) have been obtained from the national research foundation (STVF)

Department of Transport
Number of participants: 3
Project participant:
Nielsen, Otto Anker (Intern)
Madsen, Oli B.G. (Intern)
Project Manager, organisational:
Rich, Jeppe (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 150,000.00 Danish Kroner
Project

Trans Tools
TRANS-TOOLS aims to produce a European transport network model covering both passengers and freight, as well as intermodal transport, which overcomes the shortcomings of current European transport network models. Main shortcomings include the unsatisfactory representation of mix of traffic (short/long distance and freight/passenger), the (partly) missing presence of intermodality and freight logistics in models, differences in implementation of Origin-Destination base year for freight traffic in some models, outdated character of some models, no sufficient linkage of network based transport models with socio-economic effects and external effects. As on the European realm different models for different options and with different IPR settings are anticipated, it is useful to construct an IPR free instrument on the basis of the best available knowledge (i.e. notably at partners that have been involved in building models that involve European policy questions). The aim is to develop a European network-based transport model starting from the ideas consolidated in the modelling experience of the consortium partners. This means that some of the features of the current available EU models will be added, considering that while the model cannot be a tool for every purpose, the selection of the model features should be essentially on the basis of the policy needs addressed by the European Commission services. It is already quite clear that the SCENES model approach will provide good suggestions for the treatment of passenger transport and the interaction of local and long distance traffic, that the VACLAV transport network will be a suitable basis for the development of an efficient transport assignment model, that NEAC will provide the
information for proper description of freight transport and that the SCENES model will constitute a reference for the treatment of intermodal transport, as well as SLAM for logistics. This will lead in the following clear innovations obtained form TRANS-TOOLS: • New set up of a demand/supply model; • Intermodality for passenger/freight (as National and European transport policies seek to promote intermodality through different measures); • Inclusion of intercontinental flows (mainly for freight), as some models do not cover this segment; • Full coverage of Central and Eastern Europe (Accession Countries and the countries at the borders of the enlarged European Union); • Integration of the new Member States at a level similar to those of EU 15; • Feedback infrastructure development economy (as the question of indirect effects in the economy and on network level is important, especially where investment has a substantial influence - notably for Accession Countries); • Logistics/freight chain explicitly included; • Coupling method with local traffic in order to address the effect of congestion on long-distance traffic; • The consortium provides access to all relevant experience concerning EU and national modelling; • A software approach is chosen which results in a software modelling tool on network level.

Department of Transport
Netherlands Organisation for Applied Scientific Research - TNO
NEA Transport Research and Training
TRT Transporti e Territorio SRL
University of Karlsruhe
Istituto di Studi per l’Integrazione dei Sistemi
Christian-Albrechts-Universität zu Kiel
European Commission - Joint Research Center
Number of participants: 14
Project ID: 35094
Contact person:
Burgess, Arnaud (Ekstern)
Vilcan, Adrian (Ekstern)
Martino, Angelo (Ekstern)
Schade, Wolfgang (Ekstern)
Ricci, Andrea (Ekstern)
Broecker, Johannes (Ekstern)
Christidis, Panayotis (Ekstern)
Project participant:
Würtz, Christian Juul (Intern)
Nielsen, Otto Anker (Intern)
Leleur, Steen (Intern)
Hansen, Stephen (Intern)
Andersen, Jonas Lohmann Elkjær (Intern)
Zabic, Martina (Intern)
Project Manager, organisational:
Overgård, Christian Hansen (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 1,400,000.00 Danish Kroner

Poverty Environment Network
Research collaboration with CIFOR investing dynamics between poverty, forests and livelihoods in tropical countries.
Riyong's contribution was a 207HH dataset from Democratic Republic of Congo

Department of Management Engineering
UNEP DTU Partnership
Period: 01/09/2004 → 01/01/2009
Number of participants: 1
Acronym: PEN
Project participant:
Centre for applied laser micro manufacture (CALM)
Under preparation

Department of Management Engineering
Elos Medtech Pinol A/S
Coloplast Danmark A/S
Teknologisk Institut
Sensor Technology Center A/S
NST A/S

Bang & Olufsen A/S
Period: 01/09/2004 → 01/08/2007
Number of participants: 8
Contact person:
Søren Olesen (Ekstern)
Kim Bager (Ekstern)
Leif Højslet Christensen (Ekstern)
Lars Lading (Ekstern)
Project participant:
Nielsen, Peter Carøe (Intern)
Olsen, Flemming Ove (Intern)
Nielsen, Jakob Skov (Intern)

Project Manager, organisational:
Hansen, Hans Nørgaard (Intern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Amount: 4,500,000.00 Danish Kroner

In-process quality assurance of micro components
Der skal udvikles måleprincipper og målemetoder til in-process kvalitetskontrol af mikrokomponenter. Måleprincipperne skal kunne håndtere 2½D og 3D mikrokomponenter og den forventede nøjagtighed skal ligge i størrelsesordenen 3 - 5 μm. Der vil primært blive arbejdet med optiske løsninger, men integration af mekaniske og optiske løsninger kan blive nødvendige for at opnå den fornødne nøjagtighed i 3D. Der vil blive fokuseret på etablering af sporbarhed i kvalitetsstyringen.

Department of Management Engineering
Period: 01/09/2004 → 01/08/2007
Number of participants: 2
Project participant:
Fugl, Jimmy (Intern)
Hansen, Hans Nørgaard (Intern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Amount: 250,000.00 Danish Kroner

Optimering af containeroperationer i havne
Department of Management Engineering
Period: 01/09/2004 → 11/04/2008
Number of participants: 5
Phd Student:
Kallehauge, Louise Sibbesen (Intern)
Main Supervisor:
Clausen, Jens (Intern)
Examiner:
Juel, Henrik (Intern)
Jensen, Rune M. (Ekstern)
Voss, Stefan (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Parallelsyntese af marked, produkt og produktion/supply chain
Department of Management Engineering
Period: 01/09/2004 → 31/08/2011
Number of participants: 5
Phd Student:
Munk, Lone (Intern)
Main Supervisor:
Mortensen, Niels Henrik (Intern)
Examiner:
Johannesson, Hans L. (Ekstern)
Hildre, Hans Petter (Ekstern)
Riitahuhta, Asko (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Project: PhD

Reduceret energiforbrug til smeltning i støberier
Department of Management Engineering
Period: 01/09/2004 → 07/03/2008
Number of participants: 5
Phd Student:
Skov-Hansen, Søren Peter (Intern)
Main Supervisor:
Tiedje, Niels Skat (Intern)
Examiner:
Hansen, Preben Nordgaard (Ekstern)
Jolly, Mark Roderic (Ekstern)
Syvertsen, Freddy (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Eksternt finansieret virksomhed
Project: PhD

Referencearkitektur for produktplatforme og produktionsprocesser
Department of Management Engineering
Period: 01/09/2004 → 09/06/2010
Number of participants: 6
Phd Student:
Pedersen, Rasmus (Intern)
Supervisor:
McAlpine, Tim C. (Intern)
User Supportive Embedded Configuration

Configuration is the technical term for the problem of selecting values for a set of parameters. The purpose of configuration is typically to setup digital equipment to behave according to user requirements or to specify needs in a software system. Common examples of configuration situations from everyday life is setting up the video-recorder at home or setting up the alarm system at work. In commerce, configuration arises for instance in tailoring a product to a customer's needs such as a PC, or in tailoring a service such as a travel. In industry, the configuration problems are even more complex than what most consumers' experience. Modern industrial equipment is facing configuration tasks with hundreds of parameters. Today's business software has thousands of parameters that influence its behaviour. The situation is that configuration is an omnipresent problem in many disguises. The goal of this project is to look beneath the disguises and contribute in three areas: to develop user interfaces suited for solving configuration tasks, to develop methods for describing product models, and to develop the basic algorithms needed for constructing configuration software that supports users in performing intuitive and error-free configurations. The three areas will be addressed by research in user-centred design, product modelling, and configuration technology. The project will focus on embedded configuration, where knowledge and rules about how a product may be configured is embedded in the product itself. Traditionally the specification of valid product configurations has been separated from the products themselves and the process of transferring knowledge about valid setup and installation from product specialists to other functions in a company, partners and end-users has been costly, error prone and time consuming. Embedded configuration eliminates the information gap between product specialists and other users of the product. Embedded configuration is to be based on a product model that captures the relevant knowledge about the product. The product model is made operational in the product as a guidance tool using a generic configuration engine and thereby turning the complex problem of configuration into an integral part of the product and the value obtained by it. In order to ensure that the guidance of the user interface is supportive in the configuration process, an approach based on analyzing the user's work processes must be taken.
**Hej temperatur korrosion af SOFC Interconnect legeringer**

**Department of Management Engineering**
Period: 01/08/2004 → 21/12/2007
Number of participants: 7
Phd Student:
Persson, Åsa Helen (Intern)
Supervisor:
Hendriksen, Peter Vang (Intern)
Mikkelsen, Lars (Intern)
Main Supervisor:
Somers, Marcel A. J. (Intern)
Examiner:
Horsewell, Andy (Intern)
Tietz, Frank (Ekstern)
Østergård, Maria Jose Landeira (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Risø (Løn)
Project: PhD

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**Job Quality in Europe/Denmark**

The Russell Sage Foundation develops and supports a cross-national comparison of the quality of low-wage employment in Europe and the United States. Having completed an extensive series of case studies of such jobs in the US in partnership with the Rockefeller Foundation, Russell Sage now seeks to commission a collection of comparable case studies for five European countries: Denmark, Germany, France, the Netherlands, and the United Kingdom. The stated aims of the overall project are to compare the quality of low-wage employment in the US with that found in Western Europe, with particular emphasis on how the wages and work conditions of low-paid employees are affected by employer responses to growing competitive pressures. Since firms in each country operate in distinctively different institutional environments, the comparisons should increase our understanding of how institutional variation affects the strategies adopted by firms in respect of work organisation, use of new technologies, wage structures, recruitment, training, career development, subcontracting, outsourcing and product/service innovation. The project concentrates on the following industries: Hotels, Retail, Hospitals, Food processing and call centers. DTU is responsible for the call center part of the research.

**Department of Management Engineering**
Aarhus University
Ecole Normale Superieure
Institute for Work and Technology
Universiteit van Amsterdam
Period: 01/08/2004 → 01/06/2006
Number of participants: 2
Project participant:
Westergård Nielsen, Niels (Ekstern)
Project Manager, organisational:
Sørensen, Ole Henning (Intern)

**Financing sources**
Source: Private funding (private)
Name of research programme: Uddannelse. Private. Fonde
Amount: 342,130.00 Danish Kroner

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**Optimering af beslutningsstøtte for vurdering af større trafikale infrastrukturprojekter**

**Department of Transport**
Psychosocial working conditions in small metal workshops
The development of an information folder for small the middle sized metal workshops about how to improve the psychosocial working conditions. The project includes the development and test of methods and tools to be used by the companies.

Department of Management Engineering
Center for Alternativ Samfundsanalyse
Period: 01/08/2004 → 01/12/2004
Number of participants: 2
Project participant: Hans Hvenegaard (Ekstern)
Project Manager, organisational:
Sørensen, Ole Henning (Intern)

Financing sources
Source: Unknown
Name of research programme: U kendt
Amount: 68,809.00 Danish Kroner

Vudering af grøndlandske bygders bæredygtighed
Department of Management Engineering
Period: 01/08/2004 → 07/03/2006
Number of participants: 2
Phd Student: Hendriksen, Kåre (Intern)
Main Supervisor: Jørgensen, Ulrik (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Kinetics of (self-)annealing in nanocrystalline electrodeposits
Department of Management Engineering
Period: 01/07/2004 → 31/08/2007
Number of participants: 2
Acronym: KANE
Project ID: 80445
Project Manager, organisational:
Somers, Marcel A. J. (Intern)
Pantleon, Karen (Intern)
Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,962,000.00 Danish Kroner

Liniebåren trafik
Department of Transport
Period: 01/07/2004 → 19/12/2008
Number of participants: 6
Phd Student:
Landex, Alex (Intern)
Supervisor:
Kaas, Anders H. (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Madsen, Oli B.G. (Intern)
Radtke, Alfons (Ekstern)
Weidmann, Ulrich Alois B. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

En national godtrafikmodel, fase 2
Department of Transport
Period: 29/06/2004 → 31/05/2005
Number of participants: 3
Project ID: 459-35089
Project participant:
Overgård, Christian Hansen (Intern)
Würtz, Christian Juul (Intern)
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Amount: 470,190.00 Danish Kroner

VIKING ASTRID AKTA
Department of Transport
Period: 28/05/2004 → 31/12/2004
Number of participants: 3
Project ID: 449-35086
Project participant:
Overgård, Christian Hansen (Intern)
Würtz, Christian Juul (Intern)
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 215,000.00 Danish Kroner
Application of Product Configuration Systems in Engineering Companies

Department of Management Engineering
Period: 01/05/2004 → 11/11/2009
Number of participants: 6
Phd Student:
Ladeby, Klaes Rohde (Intern)
Supervisor:
Pedersen, Niels (Ekstern)
Main Supervisor:
Pedersen, Jørgen Lindgaard (Intern)
Examiner:
Jacobsen, Peter (Intern)
Johannesson, Hans L. (Ekstern)
Møller, Charles (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Handling and Assembly of Microproducts

Department of Management Engineering
Period: 01/05/2004 → 21/12/2007
Number of participants: 5
Phd Student:
Gegeckaite, Asta (Intern)
Main Supervisor:
Hansen, Hans Nørgaard (Intern)
Examiner:
Lenau, Torben Anker (Intern)
Andreasen, Jan Lasson (Intern)
Fleischer, Jürgen (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Materials problems related to large scale firing of biomass
- to gain a larger knowledge concerning the oxide growth in steam at superheater conditions.
- to set up a growth model, which correlates the oxide thickness and the metal temperature.

Department of Management Engineering
Period: 01/05/2004 → 01/04/2007
Number of participants: 4
Project participant:
Hansson, Anette Nørgaard (Intern)
Montgomery, Melanie (Intern)
Somers, Marcel A. J. (Intern)
Project Manager, organisational:
Hald, John (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 2,179,000.00 Danish Kroner
Project
Metalafgivelse ved korrosion og slid i fødevareindustri

Department of Management Engineering
Period: 01/05/2004 → 21/12/2007
Number of participants: 6
Phd Student:
Jellesen, Morten Stendahl (Intern)
Supervisor:
Hilbert, Lisbeth Rischel (Intern)
Main Supervisor:
Møller, Per (Intern)
Examiner:
Leygraf, Christofer (Ekster)
Ambat, Rajan (Intern)
Nielsen, Lars Pleth (Ekster)

Financing sources
Source: Internal funding (public)
Name of research programme: Offentlig finansiering
Project: PhD

GIS-MERGE

Department of Transport
Number of participants: 1
Project ID: 379-35085
Project Manager, organisational:
Kronbak, Jacob (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 52,650.00 Danish Kroner
Project

Modellering af S-tog passagerregul.

Department of Transport
Period: 10/04/2004 → 30/06/2004
Number of participants: 2
Project ID: 000-35083
Project participant:
Landex, Alex (Intern)
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 420,000.00 Danish Kroner
Project

Diagnose på og specification af produktprogram og produktudviklingsprocessen

Department of Management Engineering
Period: 01/04/2004 → 14/04/2010
Number of participants: 6
Phd Student:
Kvist, Morten (Intern)
Supervisor:
Andreasen, Mogens Myrup (Intern)
Main Supervisor:
Mortensen, Niels Henrik (Intern)
Examiner:
Hildre, Hans Petter (Ekstern)
Malmqvist, Johan (Ekstern)
Riitahuhta, Asko (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Project: PhD

Ledelse, organisation og innovation - informationssystemer og teknologisk forandring
Department of Management Engineering
Period: 01/03/2004 → 28/02/2007
Number of participants: 3
Phd Student:
Møldrup, Morten (Intern)
Supervisor:
Møller, Niels (Intern)
Main Supervisor:
Rasmussen, Lauge Baungaard (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Literature review of health and safety activities in SMEs
A review of the literature about health and safety activities in small and mediumsized enterprises
Department of Management Engineering
Center for Alternativ Samfundsanalyse
Period: 01/03/2004 → 01/12/2004
Number of participants: 2
Project participant:
Hvenegaard, Hans (Ekstern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 347,280.00 Danish Kroner
Project

Reduktion of accident caused absenteism in SMEs
Analysis of accident cases in construction and metal industrin in order to identify resources and possibilities for prevention of accidents and early return to work.
Department of Management Engineering
Arbejdsmiljøinstituttet
Period: 01/03/2004 → 01/06/2006
Number of participants: 2
Project participant:
Bach, Elsa (Ekstern)
Project Manager, organisational:
Hasle, Peter (Intern)
Financing sources
Source: Forsk. Private danske - Andre
Name of research programme: Forsk. Private danske - Andre
Amount: 209,496.00 Danish Kroner

Framework and local agreements about the organizing of the health and safety organization
Mapping of the impact of framework between the labour unions and the employers associations and local agreements between industrial partners at enterprises about alternative ways of organizing the safety organization.

Department of Management Engineering
Period: 01/02/2004 → 01/09/2004
Number of participants: 2
Project participant:
Sørensen, Ole Henning (Intern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 404,000.00 Danish Kroner

Green Technology Foresight on Design of Environmental Friendly Products and Materials
The aim of the Green Technology Foresight project (GTF-NBI) is *To analyse the environmental potentials and risks related to the three generic technologies nanotechnology, biotechnology and ICT within the coming 15 - 20 years, especially in relation to chemicals *To identify areas, where Denmark has competencies which may contribute to enhanced competitiveness of Danish companies and position Denmark within environmentally sound design of products and materials *To analyse how environmentally promising innovation paths may be supported in Denmark and in the EU.

Department of Management Engineering
Risø National Laboratory for Sustainable Energy
Period: 01/02/2004 → 01/05/2005
Number of participants: 1
Technology Foresight, Technology Assessment, Sustainable Development
Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 1,800,000.00 Danish Kroner

Thermodynamic and Kinetic Microstructure Modelling
Department of Management Engineering
Period: 01/02/2004 → 25/06/2007
Number of participants: 6
Phd Student:
Danielsen, Hilmar Kjartansson (Intern)
Supervisor:
Hald, John (Intern)
Main Supervisor:
Somers, Marcel A. J. (Intern)
Examiner:
Pantleon, Karen (Intern)
Nilsson, Jan-Olof Kristoffer (Ekstern)
Schneider, André (Ekstern)
Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Descriptions of competences in Engineering studies
Department of Management Engineering
Period: 06/01/2004 → 01/08/2006
Number of participants: 1
Project Manager, organisational:
Andersen, Vibeke (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 450,000.00 Danish Kroner
Project:

Danish Micro Factory
Under preparation
Department of Management Engineering
Chempaq A/S
Byrum A/S
Microbotic A/S
Møller & Devicon A/S
Radiometer Medical ApS
Visiopharm
Widex A/S
Teknologisk Institut
Sensor Technology Center A/S
University of Southern Denmark
Period: 01/01/2004 → 01/12/2007
Number of participants: 17
Project participant:
Gegeckaite, Asta (Ekstern)
Fugl, Jimmy (Ekstern)
Gregersen, Johan (Ekstern)
Jacobsen, Peter (Intern)
Kjær, Erik Michael (Intern)
Michelsen, Aage U (Intern)
Ulrik Darling Larsen (Ekstern)
Henrik Andersen (Ekstern)
Michael Munk (Ekstern)
Lars Juel Christensen (Ekstern)
Michael Grunkin (Ekstern)
Jørn Vestergaard (Ekstern)
Leif Højslet Christensen (Ekstern)
Lars Lading (Ekstern)
Henrik Gordon Petersen (Ekstern)
Project Manager, organisational:
Hansen, Hans Nørregaard (Intern)
Bagger, Claus (Intern)
Ethical Traceability and Informed Choice in Food Ethical Issues

The main objective of the project is to develop the concept of ethical traceability as the basis for food buyers’ informed choice. By including philosophical and sociological researchers both theoretical and empirical aspects of ethical traceability and informed choice are investigated. The philosophical studies examine the two concepts in the light of selected philosophical theories and discussions, whereas the sociological case studies focus on the current use of traceability in the food chain and the actors’ attitudes to ethical traceability and informed choice.

Department of Management Engineering
Period: 01/01/2004 → 01/04/2008
Number of participants: 0
Food, Ethics, Traceability

Foreign Takeovers

The project will focus upon some impacts of increasing internationalization on regional innovation capabilities in the Nordic countries. How and to what extent foreign takeovers of Nordic firms affect local innovation capabilities as well as how policy makers in the Nordic countries approach this issue. By doing so the project intends to provide Nordic policy makers with a better knowledge base for policy formulation. The project consists of three sub-studies organized as modules: 1) Mapping of Multinational Corporations activity in the Nordic countries, 2) Case studies: impacts of foreign takeovers on local capabilities with software and pharmaceuticals as cases and effects on R&D, knowledge base and learning and innovation bases. 3) Policy study: policy responses to the impact of foreign takeovers on local innovation capabilities.

Department of Management Engineering
STEP
ITPS
RANNIS
VTT - Technical Research Centre of Finland
Period: 01/01/2004 → 01/01/2005
Number of participants: 6
Project participant:
Tølle, Martin (Intern)
Per Koch (Ekstern)
Anne-Christine Strandell (Ekstern)
Thorvald Finnbjörnsson (Ekstern)
Terttu Luukkonen (Ekstern)
Project Manager, organisational:
Pedersen, Jørgen Lindgaard (Intern)

Green Technology Foresight about environmentally friendly products and materials: The challenges from nanotechnology, biotechnology and ICT

Department of Management Engineering
IMPRESS, STVF research consortium

The main scientific objective of the project is to develop a concept for the use of integrated modelling of manufacturing of cast and welded parts for the purpose of optimisation already in the design phase. This will involve a coupling of thermodynamic, process structural and performance analyses as well as an investigation of the possibility to use also standard optimisation tools in the process. The objective will be applying in-house software developed at the department as well as commercial codes. New models will be developed where needed with the emphasis on making the concept of integrated modelling a usable tool for an overall optimisation involving both the manufacturing of the part and the performance of the part during service. A valuable output of the project will be a better understanding of the influence of the evolution of the metallic structure during casting and welding (including fluid flow, solidification and stress/strain) in the post process stages, and how this should be taken into account in a structured and efficient way in a numerical code. The technological objectives are aimed at a more efficient exploitation of the material by supplying realistic mechanical characteristics both in the design phase and in post exposure performance analysis. Efficiency of design and performance analysis, achieved by means of the use of optimisation techniques, will in turn supply strong reductions on testing time, lead-time to market and costs for the industries and end users.

Department of Management Engineering

Period: 01/01/2004 → 01/12/2007
Number of participants: 5
Project participant:
Domkin, Konstantin (Intern)
Hald, John (Intern)
Somers, Marcel A. J. (Intern)
Tiedje, Niels Skat (Intern)
Project Manager, organisational:
Hattel, Jesper Henri (Intern)

Financing sources

Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 4,385,000.00 Danish Kroner

Innovation and competence development in the food sector

The project analyses and develops strategies for the food sector and for governmental regulation in securing public health and nutrition. Among the themes in focus are corporate nutrition, technology foresight in relation to the food sector, product development and product strategies in the food industry, and healthier eating at worksites.

Department of Management Engineering

Danmarks Fødevareforskning
Period: 01/01/2004 → 01/12/2008
Number of participants: 2
Project participant:
bent Egberg Mikkelsen (Ekstern)
Project Manager, organisational:
Jørgensen, Michael Sagaard (Intern)
Intervention on psychosocial work environment
A study of the conditions for successful improvements of the psychosocial work environment in Danish companies.

Department of Management Engineering
Arbejdsmiljøinstituttet
Institut for Miljø, Teknologi
Center for Alternativ Samfundsanalyse
Institut for Samfundsvidenskab
Period: 01/01/2004 → 01/12/2007
Number of participants: 6
Project participant:
Møller, Niels (Intern)
Sørensen, Ole Henning (Intern)
Andersen, Vibeke (Intern)
Bach, Elsa (Ekstern)
Hvenegaard, Hans (Ekstern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 2,250,000.00 Danish Kroner

kinetics of self-annealing in nanocrystalline electrodeposits
Electrochemical deposition has become the key technology in manufacturing functional thin films with finite structures, e.g. for microsystems and microcomponents. The functionality and reliability of such films depend on their microstructure – however, the thermodynamically non-equilibrium state of as-deposited films causes substantial changes of the microstructure and related properties with time. For copper, which has become the dominant material for interconnects, dramatic microstructure changes due to recovery, recrystallization and grain coarsening have been observed even at room temperature (self-annealing). Electrodeposited nickel, a promising material to realize movable structures for micro-electro-mechanical (MEMS) applications, is well-known for changes of the internal structure at elevated temperatures. The project will focus on the (self-)annealing behavior of free-standing electrodeposited Cu- and Ni-line patterns. In-situ XRD studies of crystallographic texture and peak analysis with simultaneous monitoring of the electrical resistivity on Cu-line patterns will be supplemented by FEGSEM-EBSD. Ni-line patterns will be investigated similarly with XRD and EBSD after annealing at elevated temperatures. From in-situ synchrotron measurements during isothermal annealing the growth rates of individual grains will be determined. Based on the gathered data (recrystallized volume fraction, grain size distribution, microstrains, texture components) deviations from the processes in deformed bulk metals will be modeled in order to account for the effect of surface, interface and grain boundary energies on the driving force of (self-)annealing in nanocrystalline electrodeposited films.

Department of Management Engineering
Period: 01/01/2004 → 01/12/2006
Number of participants: 2
Project Manager, organisational:
Somers, Marcel A. J. (Intern)
Pantleon, Karen (Ekstern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,961,624.00 Danish Kroner
Manufacture of Aluminium Displays Based on Micro Technology

Department of Management Engineering
Period: 01/01/2004 → 31/08/2007
Number of participants: 7
Phd Student:
Prichystal, Jan (Intern)
Supervisor:
Bladt, Henrik H. (Ekstern)
Møller, Per (Intern)
Main Supervisor:
Hansen, Hans Nørgaard (Intern)
Examiner:
Bruus, Henrik (Intern)
Dausinger, Friedrich (Ekstern)
Leisner, Peter (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

Micromanufacturing of aluminium
The overall scientific objective is to establish a technology platform for bringing a conceptual prototype to industrial mass production

Department of Management Engineering
Period: 01/01/2004 → 01/12/2006
Number of participants: 1
Project Manager, organisational:
Hansen, Hans Nørgaard (Intern)

Financing sources
Source: Samarb.aftaler, Private danske - Andre virksomheder
Name of research programme: Samarb.aftaler, Private danske - Andre virksomheder
Amount: 200,000.00 Danish Kroner
Project

Strategier til sundhedsfremme i kantiner ved hjælp af måltidselementer

Department of Management Engineering
Period: 01/01/2004 → 02/02/2011
Number of participants: 6
Phd Student:
Thorsen, Anne Vibeke (Intern)
Supervisor:
Mikkelsen, Bent Egberg (Intern)
Main Supervisor:
Jørgensen, Michael Søgaard (Intern)
Examiner:
Clausen, Christian (Intern)
Hansen, Gitte Laub (Ekstern)
Lennermås, Maria (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Ansat eksternt
Project: PhD
The global call centre industry project: A global benchmarking survey
This project is a large comparative international research project on the quality of jobs and labor market outcomes for low wage service workers in several countries. It focuses specifically on workers in the rapidly growing call center industry, where labor markets that were once local and protected now face global competition. The dramatic growth of call centers in the last two decades is an important labor market phenomenon for low wage service workers. Whereas historically, service interactions were largely personalized and local, advanced information systems and rapidly declining costs of telecommunications have made possible the creation of geographically remote call centers in which transactions are mediated through telephone and computer technologies. This change represents a profound restructuring of labor markets for service and sales workers. Labor markets that were historically local and protected from trade are now exposed to national and even global competition.

Department of Management Engineering
Period: 01/01/2004 → 01/08/2005
Number of participants: 1
Project Manager, organisational:
Sørensen, Ole Henning (Intern)

Financing sources
Source: Private funding (private)
Name of research programme: Uddannelses. Private. Fonde
Amount: 40,000.00 Danish Kroner

The value of time for economic project evaluation.
Transport policy and behaviour
Department of Management Engineering
Period: 01/01/2004 → 31/12/2006
Number of participants: 1
Project participant:
Fosgerau, Mogens (Intern)

Financing sources
Source: Public research council
Name of research programme: The Danish Council for Independent Research
Year of approval: 2010

VIF Virtual Intelligent Forging Alliance
Department of Management Engineering
Period: 01/01/2004 → 01/06/2010
Number of participants: 1
Project Manager, organisational:
Bay, Niels Oluf (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 204,000.00 Danish Kroner

Combined Numerical and Experimental Optimization of Manufacturing of Superconducting Tape
Department of Management Engineering
Period: 01/12/2003 → 25/06/2007
Number of participants: 5
Phd Student:
Hancock, Michael Halloway (Intern)
Main Supervisor:
Bay, Niels Oluf (Intern)
Examiner:
Martins, Paulo Antonio Firme (Ekstern)
Brøndsted, Povl (Intern)
De Chiffre, Leonardo (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Competence development and evaluation
The project is based on empirical research of engineering design activities in industrial practice and in the educational setting. Besides bringing a deeper understanding of the character of design competence, the project will provide improved forms of evaluation to be used in engineering design education.

Department of Management Engineering
Period: 01/12/2003 → 01/12/2005
Number of participants: 2
Project participant:
Munch, Birgitte (Ekstern)
Project Manager, organisational:
Jørgensen, Ulrik (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 1,800,000.00 Danish Kroner
Project

Product configuration in the construction sector
The primary objective of this project is to increase the productivity and quality of the Danish building industry by the application of product configuration to support a number of different processes in the building industry. In collaboration with a number of manufacturers of products for the building industry electronic models of their respective building components will be constructed. Based on the product programme of the companies involved the models will be constructed with a view to achieving two objectives: The first objective is directed towards the outside, towards projecting architects and performing contractors. Thus, architects are to be able to apply the electronic models directly during the execution of their architecture projects, both for sketching, visualization, and projecting. The contractors are to be able to use the models in connection with pricing and different kinds of simulation: construction and logistics, etc. The second objective is directed towards the inside, towards the internal procedures of the manufacturing firms. Here, the purpose is to enhance the efficiency of and rationalize the procedures in connection with the elaboration of the production basis, list of parts, pricing and quotations. In order to achieve the above objectives the electronic models will be made parametric and configurable, meaning that the models are constructed as “intelligent” electronic building components in which are encoded the engineer expert knowledge of the manufacturing firms. If, for example, a parametric and configurable model of a concrete staircase is elaborated, the computer will, after the encoding/entering of various parameters (width of staircase, floor-to-ceiling height, materials character, banister type, etc.), automatically create a 3-D model of the staircase. The engineer expert knowledge about minimum materials thickness, quantity of steel reinforcement, appropriateness between the foundation of the staircase, its rise, etc., information that is entered in advance, ensures that the staircase can be produced and used. When the model has been configured it thus returns direct information about volume, number of incoming units, weight, etc., which facilitates the act of pricing. The way in which the project has been planned ensures that the manufacturing firms participating in the research collaboration cover all areas are representative of various areas of the building industry, so that models of all the building components included in a building project as a whole are constructed. Through the construction of models of this whole the process is being stimulated towards an application of the sophisticated electronic tools that we posses today, but which have difficulties in penetrating the market of the Danish building industry in general. The reason for establishing this research project and the collaboration with the building industry parties are the important changes that the building industry is going through at present. The trend within the building industry is towards new-industrialisation, which means that from being a trade based on craftsmanship where relatively much time was spent on the adaptation of many different building materials on the building site, with subsequent risks of errors and logistics difficulties, the trend is now towards geometrically precise, finished building components that are brought to the building site and assembled without craftsmanship adaptation. The application of product configuration offers a considerable optimisation of the building process, quality assurance, time frame, and thereby the financial management. The research project is primarily based on the know-how of the Technical University of Denmark within the area of configuration of product models (contact person: Associate Professor Lars Hvam) and of the Aarhus School of Architecture within the area of parametric building components.

Department of Management Engineering
ESTIANet
A significant part of the consultation activities in a number of important areas, including human resource development, IT-development, strategic planning and development and communication with other firms, is carried out by women consultants in small companies. Many of these women consultants have worked previously for several years in academia. However many women consultants do not receive the recognition or success that their efforts merit for a number of reasons, including exclusion from male ('old school tie') and information networks, resulting in lack of information about what is required for success on the national and European markets. Women and girls have always had less access to technology education than boys and men and this continues to be true for information technology. Consequently a high proportion of women consultants are unaware of either the capabilities and opportunities afforded by information technology or the risks to organisations that fail to make use of it. These factors hold throughout Europe to a certain extent, but they are particularly relevant to women in the candidate EU countries of the CEEC and CIS. On the positive side research results on the prerequisites for success are now available from studies carried out in a number of countries. Access to these research results and the opportunity for women consultants to interact and network with women researchers and each other would be of great benefit to both consultants and researchers. The women consultants would gain invaluable information with a resultant increase in both material and intangible rewards, whereas the women researchers would gain additional insight into the problems facing women consultants. The aim of this project is the development of a Web-based observatory and consulting center which would analyse the prerequisites for success in different European countries, with the analysis to include the effects of culture, different economic systems, histories and other specifically national factors on success, and gender differences in approaches and attitudes to success. The project would involve existing networks from higher education and the comparative analysis and integration of existing research results. All project outputs would be available in several different European languages to make them accessible to women consultants across Europe. In addition project outputs would be produced in a variety of media to make them accessible to disabled women consultants and researchers. Integrated data bases of research results will be set up and made available on the web, as well as on CD and in hard copy. All web sites will be fully accessible both to disabled consultants and researchers and women with older software and hardware. Discussion forums will be established, both on the web and on a rotating basis in several different countries across Europe. The availability of these two types of discussion forums will enable the participation of more women researchers and consultants and also have the advantages of facilitating direct contact between women researchers and consultants. Results from the face-to-face discussion forums will also be published on the web.
Phase identification and internal stress analysis of steamside oxides on superheater tubes by means of X-ray diffraction

Department of Management Engineering
Period: 01/10/2003 → 01/06/2004
Number of participants: 2
Project participant:
Pantleon, Karen (Intern)
Project Manager, organisational:
Montgomery, Melanie (Intern)

Financing sources
Source: Sam.arb.aftaler - Udenlandske offentlige og private
Name of research programme: Sam.arb.aftaler - Udenlandske offentlige og private
Amount: 513,400.00 Danish Kroner

Værdier og identitet i forarbejdningsleddet. Virksomhedsudviklingsplaner for økologisk orienterede virksomheder

Department of Management Engineering
Period: 01/10/2003 → 29/09/2010
Number of participants: 5
Phd Student:
Hansen, Mette Weinreich (Intern)
Main Supervisor:
Kristensen, Niels Heine (Intern)
Examiner:
Clausen, Christian (Intern)
Jacobsen, Eivind (Ekstern)
Mac, Anita Marianne (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Offentlig finansiering
Project: PhD

Aktivitetsbaseret trafikmodellering af roadpricing

Department of Transport
Period: 01/09/2003 → 07/03/2008
Number of participants: 6
Phd Student:
Mabit, Stefan Eriksen (Intern)
Supervisor:
Fosgerau, Mogens (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Rich, Jeppe (Intern)
Bierlaire, Michel (Ekstern)
Daly, Andrew (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD
Means in regulation of the work environment
An analysis of means in the regulation of the work environment based on company motives to preventive activities.

Department of Management Engineering
Roskilde University
Period: 01/09/2003 → 01/01/2004
Number of participants: 4
Project participant:
Jensen, Per Langaa (Intern)
Nielsen, Klaus T. (Ekstern)
Helge Hvid (Ekstern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 100,000.00 Danish Kroner

Numerical modelling of resistance welding
Testing and modelling of of material and contact properties in resistance welding.

Department of Management Engineering
Period: 01/09/2003 → 01/06/2004
Number of participants: 2
Project participant:
Zhang, Wenqi (Intern)
Project Manager, organisational:
Bay, Niels Oluf (Intern)

Financing sources
Source: Uddannelse. Statslige. Andre statslige
Name of research programme: Uddannelse. Statslige. Andre statslige
Amount: 50,000.00 Danish Kroner

Nye organisationsformer i videnintensive virksomheder - nye veje til at styrke virksomhedens konkurrence evne

Department of Management Engineering
Period: 01/09/2003 → 21/12/2010
Number of participants: 5
Phd Student:
Grex, Sara (Intern)
Main Supervisor:
Møller, Niels (Intern)
Examiner:
Havn, Erling C. (Intern)
Claussen, Tor (Ekstern)
Riis, Jens Ove (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Trendchart Lot 1, 2003-2004
The project registrates Danish national technology and innovation policy programmes. The registration takes place inside a common framework for all countries taking part. These are all EU countries and some other countries as Norway, Iceland and Israel. Some more analytical work are done on basis of the registration.
Metal release by corrosion and wear in food industry

The objectives of this project are to identify the sources of metal contamination from stainless steel equipment in food industry, analyse the impact of the contamination and finally to suggest solutions for the problem. Metal release can cause a health risk for consumers with nickel allergy and the acquisition of data on metal content in not only raw products but also in manufactured food and ready-to-eat dishes will be an improvement of the present status. The obtained data on food products will be analysed and compared with challenge doses and estimated daily intake. By materials selection and development of more wear and corrosion resistant surfaces the general food quality can be improved, metal release reduced and longer lifetime of process equipment obtained – all leading to better products. So by technological solutions safe and high quality food production can be made possible.

New Concept of Industrial Welding and Cutting

If the technology functions as expected it will have a great potential. At best, it should be able to revolutionize industrial welding and thermal cutting. It has a theoretical potential to obtain unseen cutting speeds in both thin plates as well as thick steel plates. It should also be possible to obtain welding qualities and production capacities, which clearly surpass what can be realized today in practical welding production. The process will be competitive to the known technologies both in investment costs as well as operating costs.
Project Manager, organisational:
Gong, Hui (Intern)

**Financing sources**
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 1,200,000.00 Danish Kroner

**PROTOMA**
The aim of this project is to create a new highschool/graduate/post graduate course of study that will educate students in the emerging Rapid Prototyping (RP) techniques. The lack of RP experts in Europe has been indeed pointed out by the companies working in this area. Nowadays companies "solve" the problem by internally educate their employees.

Department of Management Engineering
Period: 01/08/2003 → 01/03/2004
Number of participants: 1
Project participant:
Bellini, Anna (Intern)

**Financing sources**
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 50,000.00 Danish Kroner

**Studies on the fundamental mechanisms of a new welding- and cutting technology**
Project Goal The goal of this project is to demonstrate a newly invented technology for thermal material processing, primarily the cutting and welding processes. Project Description If the technology functions as expected it will have a great potential. At best, it should be able to revolutionize industrial welding and thermal cutting. It has a theoretical potential to obtain unseen cutting speeds in both thin plates as well as thick steel plates. It should also be possible to obtain welding qualities and production capacities, which clearly surpass what can be realized today in practical welding production. The process will be competitive to the known technologies both in investment costs as well as operating costs.

Department of Management Engineering
Period: 01/08/2003 → 01/07/2005
Number of participants: 4
Project participant:
Gong, Hui (Intern)
Nielsen, Jakob Skov (Intern)
Storm, Søren (Intern)
Project Manager, organisational:
Olsen, Flemming Ove (Intern)

**Financing sources**
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Forskningsprojekter - Miljø- og Energiministeriet
Amount: 1,200,000.00 Danish Kroner

**Teaching in accident prevention**
Developing teaching material for 3 courses at DTU.

Department of Management Engineering
Period: 01/08/2003 → 01/10/2004
Number of participants: 2
Project participant:
Sørensen, Ole Henning (Intern)
Project Manager, organisational:
Dyhrberg, Mette Bang (Intern)

**Financing sources**
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 299,046.00 Danish Kroner

CLG - ph.d. Michael B. Pedersen
Department of Transport
Period: 23/04/2003 → 31/07/2005
Number of participants: 1
Project ID: 421-35070
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,288,000.00 Danish Kroner

A comparison of work environment and work environment activities between small and large companies
An analysis of similarities and differences between small and large companies regarding the work environment and the work environment activities. Based on samples of companies which are interviewed by phone or visited.

Department of Management Engineering
Arbejdsmiljøinstituttet
Period: 01/04/2003 → 01/12/2004
Number of participants: 3
Project participant:
Sørensen, Ole Henning (Intern)
Elsa Bach (Ekstern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 270,000.00 Danish Kroner

Good psychosocial work environment in slaughterhouses for pigs
A study of best practice on the psychosocial work environment in four slaughterhouses for pigs with better performance regarding absenteism, labour turn over and strikes.

Department of Management Engineering
Period: 01/04/2003 → 01/12/2004
Number of participants: 2
Project participant:
Hasle, Peter (Intern)
Project Manager, organisational:
Møller, Niels (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 690,000.00 Danish Kroner

Struktureret analyse af produkter og livsfasesystemer
Department of Management Engineering
Period: 01/04/2003 → 31/10/2003
Number of participants: 2
Phd Student:
Jensen, Anders Arnun (Ekstern)
Main Supervisor:
Hvam, Lars (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

**Tailoring the Mechanical and Thermal Properties of Electrodeposited Micro Components by Controlling the Internal Micro- and Nano-structure**

Department of Management Engineering
Period: 01/04/2003 → 11/06/2007
Number of participants: 7
Phd Student:
Mizushima, Io (Intern)
Supervisor:
Hansen, Hans Nørgaard (Intern)
Tang, Peter Torben (Intern)
Main Supervisor:
Somers, Marcel A. J. (Intern)
Examiner:
Jacobsen, Torben (Ekstern)
Leisner, Peter (Intern)
Yamasaki, Tohru (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

**Virksomhedsmodeller for Mass Customisation**

Department of Management Engineering
Period: 01/04/2003 → 01/11/2003
Number of participants: 2
Phd Student:
Knudsen, Marianne Toftgaard (Ekstern)
Main Supervisor:
Hvam, Lars (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

**Work Environment and Technological Change in a Cultural Perspective**
An analysis of the influence of the cultural dimension on work environment and technological change.

Department of Management Engineering
Period: 01/04/2003 → 01/06/2004
Number of participants: 3
Project participant:
Sørensen, Ole Henning (Ekstern)
Broberg, Ole (Intern)
Project Manager, organisational:
Hasle, Peter (Intern)

**Financing sources**
Source: Samarb aftaler, Private danske - Andre virksomheder
Improving International Science Shop Networking
Development of the international networking among science shops through development of international journal and newsletter, coaching structures and concepts for joint research activities.

Department of Management Engineering
Utrecht University
Period: 01/03/2003 → 01/09/2005
Number of participants: 2
Project participant:
Johanna van Eijndhoven (Ekstern)

Project Manager, organisational:
Jørgensen, Michael Segaard (Intern)

Financing sources
Source: Udenfor rammen

Development and international relations. Co-advisor for Ph.D. student
Department of Management Engineering
Period: 01/02/2003 → 01/06/2007
Number of participants: 1
Project participant:
Røpke, Inge (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske

Development of Supply Networks
The purpose of this project is to develop a systematic approach for the development and analysis of supply chains. The basis for this is an identification and definition of generic elements and structures in order to establish a taxonomy of supply chains architectures. Furthermore, it is the aim to define performance measures for supply chains and to identify relationships between structures and performances (both efficiency and effectiveness). The supply chain will be seen in a strategic context, including technological, organisational and inter-organisational aspects with special focus on new structures enabled by the possibilities of new ICT and new ways of organising the interplay between enterprises.

Department of Management Engineering
Period: 01/02/2003 → 01/02/2006
Number of participants: 2
Project participant:
Bjergelund, Kim (Ekstern)
Michelsen, Aage U (Intern)

Financing sources
Source: Forskningsrådene - STVF

Improving International Science Shop Network (ISSNET)
The general objective of the thematic network 'Improving Science Shop Networking' (ISSNET) is to give citizens around Europe better access to scientific information and expertise. The demand-driven approach of science shops contributes to this objective and offers citizens a tool to contribute in the science and society debate. Sharing the expertise of existing science shops and support for the development of new science shops by improving the networking of science shops will advance citizens' participation in the dialogue between science and society. An international science shop network will be
an instrument to link or initiate local or regional initiatives. In this way it will advance the outreach, size and impact of the contribution of science shops to citizens’ access to scientific information, knowledge and expertise. Activities of ISSNET contribute to the start, set up, and maintenance of an international science shop network. ISSNET will also develop collaborative relationships with science shop-like institutions and networks inside and outside of Europe.

Department of Management Engineering
Utrecht University
Institut FBI
Technical University of Berlin
Gheorghe Asachi Technical University of Iasi

Period: 01/02/2003 → 01/12/2005
Number of participants: 6
Project participant:
Brodersen, Søsser (Intern)
Johanna van Eijndhoven (Ekstern)
Andrea Gnaiger (Ekstern)
Wolfgang Endler (Ekstern)
Carmen Teodosiu (Ekstern)

Project Manager, organisational:
Jørgensen, Michael Seggaard (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 90,000.00 Danish Kroner

Improving Science Shop Networking
Department of Management Engineering
Period: 01/02/2003 → 01/11/2005
Number of participants: 2
Science shop, Sustainable water management
Acronym: ISSNET
Project participant:
Jørgensen, Michael Søgaard (Intern)
Brodersen, Søsser (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 120,000.00 Danish Kroner

Inddragelse af sociale, sundheds- og sikkerhedsmæssie aspekter i livscyklusvurdering af produkter og servicedydelser
Department of Management Engineering
Period: 01/02/2003 → 02/12/2009
Number of participants: 6
Phd Student:
Dreyer, Louise Camilla (Intern)
Supervisor:
Schierbeck, Jens (Ekstern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Wangel, Arne (Intern)
Griesshammer, Rainer (Ekstern)
Olsen, Mette (Ekstern)
**Financing sources**
Source: Internal funding (public)
Name of research programme: ErhvervsPhD-ordningen VTU
Project: PhD

**Life cycle assessment on Gold (24 Carats)**
coming

Department of Management Engineering
Period: 01/02/2003 → 01/10/2003
Number of participants: 1
Project Manager, organisational:
Bhander, Gurbakhash Singh (Intern)

**Regionale innovationsnetværk - en udfordring for den økologiske omlægningsproces**

Department of Management Engineering
Period: 01/02/2003 → 16/04/2007
Number of participants: 7
Phd Student:
Elle, Jens Christian (Intern)
Supervisor:
Mikkelsen, Bent Egberg (Intern)
Nielsen, Kurt Aagaard (Ekstern)
Main Supervisor:
Kristensen, Niels Heine (Intern)
Examiner:
Jørgensen, Michael Søgaard (Intern)
Nielsen, Lise Drewes (Ekstern)
Roos, Hans-Edvard (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Project: PhD

**Strategi for produktinnovation - et værksted til generering og udvælgelse af produktinnovationsprojekter**

Department of Management Engineering
Period: 01/02/2003 → 08/07/2008
Number of participants: 7
Phd Student:
Larsson, Flemming (Intern)
Supervisor:
Andreasen, Mogens Myrup (Intern)
Hein, Lars (Intern)
Main Supervisor:
Mortensen, Niels Henrik (Intern)
Examiner:
Hildre, Hans Petter (Ekstern)
Hansen, Niels Stengaard (Ekstern)
Johannesson, Hans L. (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Ansat ekstern
Project: PhD
Udvikling af produktionsnetværk
Department of Management Engineering
Period: 01/02/2003 → 28/02/2005
Number of participants: 2
Phd Student:
Bjergelund, Kim (Intern)
Main Supervisor:
Michelsen, Aage U (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Wind Energy: The facts
EWEEA

With responsibility for the employment effects of wind turbine manufacturing and installation. Input-output analysis of direct and indirect employment associated with manufacture, installation and maintenance of wind-turbines.

Department of Management Engineering
European Wind Energy Association
University of Flensburg
Period: 01/01/2003 → 31/12/2003
Number of participants: 2
Project participant:
Klinge Jacobsen, Henrik (Intern)
Morthorst, Poul Erik (Intern)

Relations
Publications:
Industry and employment
Project

Analyse af erfaringer med miljøledelse i produktkæder
Department of Management Engineering
Period: 01/01/2003 → 01/04/2007
Number of participants: 1
Project Manager, organisational:
Jørgensen, Michael Segaard (Intern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Forskningsprojekter - Miljø- og Energiministeriet
Amount: 400,000.00 Danish Kroner
Project

Case hardening of stainless steel
Implementation of case hardening of stainless steel in industry.
Department of Management Engineering
Period: 01/01/2003 → 01/06/2004
Number of participants: 2
Project participant:
Christiansen, Thomas Lundin (Intern)
Project Manager, organisational:
Somers, Marcel A. J. (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Framework agreements about alternative ways of organizing the safety organization
Mapping of the prevalence of framework agreements between the labour unions and the employers associations about alternative ways of organizing the safety organization.

Department of Management Engineering
Period: 01/01/2003 → 01/05/2003
Number of participants: 2
Project participant:
Jensen, Per Langaa (Intern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 50,000.00 Danish Kroner
Project

Håndbog til tekstilvirksomheder
Department of Management Engineering
Period: 01/01/2003 → 05/01/2007
Number of participants: 1
textile industry, environmental strategy, CSR, corporate social responsibility
Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Forskningsprojekter - Miljø- og Energiministeriet
Amount: 400,000.00 Danish Kroner
Project

Material problems in waste incinerators
Investigation of the effect of microstructures in Ni-base weld overlays on corrosion of water walls in waste incinerators.

Department of Management Engineering
Period: 01/01/2003 → 01/01/2005
Number of participants: 2
Project participant:
Højerslev, Christian (Intern)
Project Manager, organisational:
Tiedje, Niels Skat (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Amount: 1,488,000.00 Danish Kroner
Project

Metal Release by Corrosion and Wear in the Food Industry
The objectives of this project are to identify the sources of metal contamination from stainless steel equipment in food industry, analyse the impact of the contamination and finally to suggest solutions for the problem. Metal release can cause a health risk for consumers with nickel allergy and the acquisition of data on metal content in not only raw products but also in manufactured food and ready-to-eat dishes will be an improvement of the present status. The role of the National Food Institute is to analyse trace elements in processed raw materials and foodstuffs sampled at various sites along the process line in the food industry. The trace element content is determined by Inductively Coupled Plasma Mass Spectrometry (ICPMS) equipped with a collision/reaction cell for interference reduction/removal. The obtained data on food products will be analysed and the health risk evaluated by comparison with the estimated daily intake. By materials selection and development of more wear and corrosion resistant surfaces the general food quality can be improved, metal
release reduced and longer lifetime of process equipment obtained – all leading to better products. So by technological solutions safe and high quality food production can be made possible.

Department of Management Engineering
Division of Food Chemistry
National Food Institute
University of Copenhagen
Period: 01/01/2003 → 31/07/2007
Number of participants: 4
Project participant:
Møller, Per (Ekstern)
Poulsen, Lars K. (Ekstern)
Larsen, Erik Huusfeldt (Intern)
Project Manager, organisational:
Sloth, Jens Jørgen (Intern)

Product specification systems: Economics, Technology and Organisation
Product specification systems: Economics, Technology and Organisation (ProSSETO) The project was started the 1st of February 2003 and is funded by the Danish Technical Research Council (http://www.forsk.dk/eng/stvf/index.htm), the project ends the 31st December 2004. The Danish Technical Research Council has generously donated 2 million DKK covering four man-years plus expenses. It is the purpose of the project to develop knowledge about the use of product specification systems perceived as a combination of technical, economic, and organisational factors. The project has put forth the hypothesis that interplay between these three factors is crucial for realizing benefits from implementing product specification systems with regard to technical functionality, competitiveness and work environment. The project will further shed light on the radical organisational changes resulting from implementing a product specification system. The research is conducted by a team of 6 researchers with experience and competence in the areas of economics, organisation and the technical aspects of product specification systems. The project is headed by Associate Professor Lars Hvam email: lhv@ipl.dtu.dk whom together with Assistant Professor Jesper Riis, email jri@ipl.dtu.dk represents the technical perspective. The Economic perspective is contributed by Associate Professor Jørgen Lindgaard Pedersen, email: jlp@ipl.dtu.dk and Assistant Professor Kasper Edwards, email: ke@ipl.dtu.dk. The organisational perspective is provided by Associate Professor Niels Møller, email nm@ipl.dtu.dk and Research Assistant Morten Møldrup, email: mmd@ipl.dtu.dk.

Department of Management Engineering
Period: 01/01/2003 → 01/12/2004
Number of participants: 6
Project participant:
Pedersen, Jørgen Lindgaard (Intern)
Møller, Niels (Intern)
Edwards, Kasper (Intern)
Riis, Jesper (Intern)
Møldrup, Morten (Intern)
Project Manager, organisational:
Hvam, Lars (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 2,000,000.00 Danish Kroner

Strategies for sustainable transition
Strategies for sustainable transition within different product or service areas are studied. This includes the Danish experience with organic food production and consumption and the use of eco-labelling in the textile sector. The mechanisms in path creation and path dependency are studied and different theories for explaining the shaping of sustainable transition looked for.

Department of Management Engineering
Period: 01/01/2003 → 01/12/2006
Number of participants: 1
Technology Foresight
Technology foresight as strategy in developing strategies for integration of innovation policy with for example health policy and environmental policy. In 2003 participation in technology foresight on food technology in Danish Association of Engineers. Furthermore participation in green technology organised by Ministry of Science, Technology and Innovation and preparation of a project on green technology foresight of nanotechnology, biotechnology and ICT, which will start in the beginning of 2004 in co-operation with Risø, Institute of Product Development and a number of DTU departments. Relations to the research on strategies for sustainable transition.

Department of Management Engineering
Risø National Laboratory for Sustainable Energy
The Danish Society of Engineers, IDA
Period: 01/01/2003 → 01/12/2005
Number of participants: 3
Project participant:
Andersen, Niels Hessel (Intern)
Fonnesbech, Bjarke (Ekstern)
Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt

Udvikling af indikatorsystem for materialestrømme, ressourceforbrug og -effektivitet samt affaldsstrømme
Department of Management Engineering
Period: 01/01/2003 → 01/03/2007
Number of participants: 1
resource indicators, resource consumption, resource efficiency
Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Forskningsprojekter - Miljø- og Energiministeriet
Amount: 1,390,000.00 Danish Kroner

VIKING 2002+2003
Department of Transport
Period: 19/12/2002 → 31/03/2004
Number of participants: 1
Project ID: 359-35066
Project Manager, organisational:
Herslund, Mai-Britt (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 747,400.00 Danish Kroner
Call Centre- development of work

The Danish research project: “Development of competences and work organization in call centres” – also named “Call centres – development of work” www.callcentres.dk (2003-2005). The project is an intervention project – a combination of research and change - in collaboration with four Danish companies (Danske Bank, TDC, Nykredit og Sydsjællands Eielskab) and carried out in six call centres with 800 employees. The idea is to develop competencies and work organization in order to better working conditions and the quality of service. The first half of 2003 has been dedicated to research and dialogue: A survey covering all 800 employees, case studies and dialogues with managers and employees of perspectives and possibilities of positive changes. Now (2003 autumn) the change-plans I the different call centres have been decided and the changes will start up in October 2003). Niels Møller is leader of the project. The project is supported with 15,5 million Danish crowns (2 mio euro) from The European Social Fund and with a support from the companies up to 30 million. The project has already built its own network and relations to other networks in the Danish call centre industry. The EU project "Call centres – development of work" consists of four researchers at DTU and CASA and a group of consultants from Handelsskolen Sjælland Syd. The project has a reference group (see www.callcentre.dk) representing a broad range of interest (labour marked organization, public services and institutions).

Department of Management Engineering
Period: 01/12/2002 → 01/12/2005
Number of participants: 1
Project Manager, organisational:
Møller, Niels (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 1,026,000.00 Danish Kroner
Project

CIRP Inter-laboratory comparison of coordinate measurements using an optomechanical hole plate

An interlaboratory comparison on mechanical and optical coordinate measuring machines (CMMs) was organized by the Centre for Geometrical Metrology (CGM), Department of Manufacturing Engineering and Management (IPL), Technical University of Denmark (DTU) and carried out within Collège International pour l’Etude Scientifique des Techniques de Production Mécanique (CIRP). The project was carried out in the period from August 2002 to November 2004. In the project, 15 research laboratories were involved from 9 countries: Belgium, Denmark, Germany, Italy, Poland, Spain, Switzerland, United Kingdom, USA. A total of 23 CMMs (12 mechanical and 11 optical) were used to measure an optomechanical hole plate designed and manufactured by DTU. A measurement procedure was sent to each participant together with a plate to be measured. The measurement procedure refers to the German DKD guideline, using the reversal method with traceability achieved by a comparator measurement. Using the optomechanical hole plate, the measurement procedure can be carried out on optical as well as mechanical measuring machines. Circulation started in March 2003, and was completed in September 2003, whith three optomechanical hole plates being circulated at the same time. A smooth and timely circulation was obtained. The measuring procedure was reported by all participants to be followed without problems. A report was produced for each participant where the results of the single participant are analysed and compared with the reference values provided by CGM, using mechanical calibration according to the DKD guideline. An expanded uncertainty U = 1.2 µm was used by CGM. The reference values were verified after circulation within the measuring uncertainty. The optomechanical hole plate has proven to be a suitable artefact for both mechanical and optical CMM measurements. The construction of the plates has shown a good stability through the approx. 6 month circulation, even though the plates have been measured mechanically, using touch probes. Only a problem was experienced: some holes on a plate showed a calibration difference of about one micrometer after circulation. This is probably due to some sensitivity of the plate to clamping, which otherwise has not been a problem. This observation has led to an additional instruction following the plate of not using clamps. From the results from the comparison, it can be expected that the optomechanical hole plates can be calibrated using the DKD procedure with an uncertainty in the range between 0.5 µm and 2 µm. Using the hole plate, it is possible to compare the performance of measurements obtained using optical and mechanical CMMs. Optical CMM measurements can be divided in two groups. A group leading to deviations larger than 2 µm, and a group with deviations that are comparable to those using mechanical machines. All but one laboratory could perform reversal measurements. Transfer of traceability was established as follows: 8 using gauge blocks, 2 laser interferometers, 1 zerodur hole plate, 2 callipers, and 1 quartz standard. Out of the 23 measurement campaigns, 5 optical and 2 mechanical machines were not provided with establishment of traceability. The optomechanical hole plate is a suitable reference artefact providing traceability of CMMs, in particular optical CMMs which seem to lack available artefacts. A comparison of measurements in a single plate position shows agreement with reference values within the reference uncertainty. This comparison shows that optical measurements, generally speaking, can be as good as mechanical ones.

Department of Management Engineering

University of Naples Federico II
**Green technology foresight**

**Department of Management Engineering**

**Period:** 01/12/2002 → 01/12/2004  
**Number of participants:** 4  
**Environmental regulation**

**Project participant:**
- Hansen, Anne Grethe (Intern)  
- Wenzel, Henrik (Intern)  
- Jørgensen, Ulrik (Intern)  
- Jørgensen, Michael Søgaard (Intern)

**Project Manager, organisational:**
- Jørgensen, Michael Søgaard (Intern)

**Financing sources**

**Source:** Udenfor rammen  
**Name of research programme:** Udenfor rammen  
**Amount:** 0.00 Danish Kroner

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**Kultur i badeværelset - en undersøgelse af kulturelle hinderinger og potentialer for recirkulering af urin og fæces**

**Department of Management Engineering**

**Period:** 01/12/2002 → 21/12/2007  
**Number of participants:** 6  
**Phd Student:**
- Quitzau, Maj-Britt (Intern)  
**Supervisor:**
- Kaltoft, Pernille (Intern)  
**Main Supervisor:**
- Repke, Inge (Intern)  
**Examiner:**
- Lindegaard, Hanne (Intern)  
- Drangert, Jan-Olof (Ekstern)  
- Jensen, Jesper Ole (Intern)

**Financing sources**

**Source:** Internal funding (public)  
**Name of research programme:** Ansat eksternt

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**Learning environment at the workplace**

**Department of Management Engineering**

**Period:** 01/12/2002 → 01/12/2004  
**Number of participants:** 1  
**Project Manager, organisational:**
- Andersen, Vibeke (Intern)

**Financing sources**
Mapping the European Knowledge Base of Socio-Economic Impact Studies of ISTs
EKB-SEIS

Department of Management Engineering
Period: 01/12/2002 → 01/12/2003
Number of participants: 1
Project Manager, organisational:
Jørgensen, Ulrik (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 135,000.00 Danish Kroner

Moderne kommunikationsteknologi i hverdagslivet

Department of Management Engineering
Period: 01/12/2002 → 04/07/2008
Number of participants: 5
PhD Student:
Christensen, Toke Haunstrup (Intern)
Main Supervisor:
Røpke, Inge (Intern)
Examiner:
Jørgensen, Ulrik (Intern)
Halkier, Bente (Ekstern)
Levold, Nora (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

SPACES

Department of Management Engineering
Department of Mechanical Engineering
Period: 01/12/2002 → 01/12/2007
Number of participants: 8
Project participant:
Broberg, Ole (Intern)
Jørgensen, Michael Søgaard (Intern)
Yoshinaka, Yutaka (Intern)
Lindegaard, Hanne (Intern)
Lenau, Torben Anker (Intern)
McAlone, Tim C. (Intern)
Project Manager, organisational:
Jørgensen, Ulrik (Intern)
Clausen, Christian (Intern)

Financing sources
Source: [Ordinær drift UK 10]
Name of research programme: [Ordinær drift UK 10]
Adfærdsmodeller for passageres rutevalg
Department of Transport
Period: 01/11/2002 → 30/11/2003
Number of participants: 2
Phd Student:
Jansen, Leise Neel (Ekstern)
Main Supervisor:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Development of methods to measure quality of co-determination in state institutions
Department of Management Engineering
Roskilde University
Period: 01/11/2002 → 01/12/2004
Number of participants: 3
Project participant:
Olsén, Peter (Intern)
Helge Hvid (Ekstern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 405,000.00 Danish Kroner

THE POTENTIAL OF LIFE CYCLE ASSESSMENT TOOLS FOR SUPPORTING GREEN PRODUCT DESIGN
Department of Management Engineering
Period: 01/11/2002 → 01/06/2003
Number of participants: 1
Project Manager, organisational:
Bhander, Gurbakhash Singh (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt

Analyses of experience with environmental management in product chains
Experience with environmental management in 25 Danish product chains are analysed and strategic recommendations for governmental regulation etc. is developed.
Department of Management Engineering
Period: 01/10/2002 → 01/12/2005
Number of participants: 3
Project participant:
Forman, Marianne (Intern)
Hansen, Anne Grethe (Intern)
Project Manager, organisational:
Jørgensen, Michael Sagaard (Intern)

Financing sources
Center for mikrosystems for chemical and bio-chemical analysis based on polymers (µKAP)
The objective project is to establish a research based Danish center of competence regarding industrialisation of micro-fluidic systems and chemical/bio-chemical lab-on-a-chip sensors based on polymers. The project represents a shift from a traditional silicon-based technology to polymer technologies. The project will cover the entire process chain from design and product development to production and final product. The role of IPL is to develop solutions for inserts for injection moulding of micro structures based on electroforming.

Department of Management Engineering

Department of Micro- and Nanotechnology
Teknologisk Institut
Period: 01/10/2002 → 01/06/2006
Number of participants: 4
Project participant:
Hansen, Hans Nørregaard (Intern)
Christensen, Leif Højslet (Ekstern)
Tellemans, Pieter (Ekstern)

Project Manager, organisational:
Tang, Peter Torben (Intern)

Financing sources
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 1,200,000.00 Danish Kroner

DK Superconducting Tape Technology, 2001-2003
DK Superconducting Tape Technology, 2001-2003

Department of Management Engineering

Nordic Superconductor Technology
Risø National Laboratory

Haldor Topsoe AS
Period: 01/10/2002 → 01/12/2003
Number of participants: 6
Project participant:
Nielsen, Morten Storgård (Intern)
Eriksen, Morten (Intern)
Jørn Bindslev Hansen (Ekstern)
Niels Hessel Andersen (Ekstern)
Christiansen, Jens (Ekstern)

Project Manager, organisational:
Bay, Niels Oluf (Intern)

Financing sources
Source: Forskningsprojekter - Erhvervsministeriet
Name of research programme: Forskningsprojekter - Erhvervsministeriet
Amount: 2,119,000.00 Danish Kroner

Microinterferometer Flow Channel Systems using Backscatter Detection for Biological and Physical Applications

Department of Management Engineering
Period: 01/10/2002 → 30/06/2006
Number of participants: 8
Microstructure Stability of High Temperature Gas Turbine Components

Department of Management Engineering
Period: 01/10/2002 → 06/04/2006
Number of participants: 6
Phd Student: Dahl, Kristian Vinter (Intern)
Supervisor: Hald, John (Intern)
Main Supervisor: Horsewell, Andy (Intern)
Examiner: Somers, Marcel A. J. (Intern)
Bhadeshia, Harshad K. D. H. (Ekstern)
Blum, Rudolph (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Eksternt finansieret virksomhed
Project: PhD
Center for mikrosystemer til Kemisk og Biokemisk analyse baseret på Polymerer
Department of Micro- and Nanotechnology
Department of Management Engineering
Radiometer Medical ApS
Nunc A/S
Scandinavian Micro Biodevice ApS
Danfoss A/S
VIR A/S
Sensor Technology Center A/S
DELTA
Teknologisk Institut
Number of participants: 3
Project ID: 56099
Project participant:
Tang, Peter Torben (Intern)
Hansen, Hans Nørgaard (Intern)
Project Manager, organisational:
Geschke, Oliver (Intern)

Financing sources
Source: Forsk. Andre offentlige og private - Udenlandske
Name of research programme: Forsk. Andre offentlige og private - Udenlandske
Amount: 4,414,800.00 Danish Kroner

Building new business through corporate Venturing
Department of Management Engineering
Period: 01/09/2002 → 02/02/2006
Number of participants: 5
Phd Student:
Skat-Rørdam, Peter (Intern)
Main Supervisor:
Bruun, Peter (Intern)
Examiner:
Christoffersen, Mads (Intern)
Leifer, Richard P. (Ekstern)
Sant, Knud (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet
Project: PhD

Chemicals regulation - the case of LAS
The project aims at elucidating and discussing the present trends in the regulation of chemicals by the use of an illustrative case study.

Department of Management Engineering
Period: 01/09/2002 → 01/12/2004
Number of participants: 2
Project Manager, organisational:
Røpke, Inge (Intern)
Lauridsen, Pia Vestergaard (Ekstern)

Project

**Effect of Grain Orientation on Dislocation Structures at Large Strains**

Department of Management Engineering  
Period: 01/09/2002 → 06/04/2006  
Number of participants: 6  
Phd Student:  
Li, Zhengjie (Ekstern)  
Supervisor:  
Winther, Grethe (Intern)  
Main Supervisor:  
Bay, Niels Oluf (Intern)  
Examiner:  
Mikkelsen, Lars Pilgaard (Intern)  
Barlow, Claire Y. (Ekstern)  
Hutchinson, William Bevis (Ekstern)

**Financing sources**

Source: Internal funding (public)  
Name of research programme: Risø (Løn)  
Project: PhD

**Global Network on Energy for Sustainable Development (facilitated by UNEP)**

The Global Network on Energy for Sustainable Development (GNESD) facilitated by UNEP is a south-south knowledge network, set up as a type II intervention after the World Summit of Sustainable Development (WSSD). The GNESD Secretariat is hosted at the UNEP Risoe Centre, DTU, with 10 member centres located in three continents (Africa, Asia and Latin America): AFREPREN/FWD (Kenya), ENDA (Senegal), ERC (South Africa), MEDREC (Tunisia), TERI (India), AIT (Thailand), ERI (China), Bariloche Foundation (Argentina), CENBIO/UFRJ (Brazil) and the Mario Molina Centre (Mexico).

The objective of GNESD is to promote energy access in developing countries and to establish synergistic opportunities between energy access and development. It does this by undertaking scientific research and providing practical policies that help governments and intergovernmental organizations to further mutually inclusive energy access and development activities. Though GNESD is global, its member partners operate locally at national and regional levels.

UNEP Risø Centre  
Risø National Laboratory for Sustainable Energy  
Department of Management Engineering

UNEP DTU Partnership  
Period: 01/09/2002 → 31/12/2015  
Number of participants: 5  
Energy for Sustainable Development , Energy Access  
Acronym: GNESD  
Project participant:  
Larsen, Thomas Hebo (Intern)  
Pedersen, Mathilde Brix (Intern)  
Mackenzie, Gordon A. (Intern)  
Project Manager, organisational:  
Akom, Emmanuel (Intern)  
Christensen, John M. (Intern)

**IDEAL: Integrated Development Routes for Optimised Cast Aluminium Components**

A recently carried out Leonardo EC Project (COPROFOUND) has demonstrated that it is really fundamental to create a reliable link among metallurgy, foundry practice, numerical methods, and information technology. The integration of these fields and proper managing of the software-derived information will make the process simulation of casting processes not only a simple “solver” of particular and small-size problems, which have a relatively small impact on the production economy, but also a fundamental tool for understanding and solving the majority of problems generated during the production of cast components. So, the main technical objective is the integration of numerical codes performing
simulation of the casting process (with prediction of the microstructural and mechanical behaviour of cast alloys),
optimisation of the manufacturing cycle and structural analysis (including the analysis of crash behaviour of cast
components). Up to now, during the design stage of a component, its mechanical properties have been regarded as
constants. In the reality, all properties of cast products change due to the different microstructural features produced by
different cooling rates achievable (consider, e.g., the effects induced by different wall thickness) and to the defects such as
porosity, oxides, strongly affecting the performances. Furthermore, residual stresses arising from the stages of
manufacturing processes are often not included in the calculations, today, due to the difficulties of getting a reliable
estimate. The first target is therefore to get a reliable forecasting of the mechanical characteristics directly from casting
simulation. Then this information will be transferred as input to structural analysis codes that may so consider a quite
realistic material instead of calculating the usual ideal one. A better knowledge of the microstructure (resulting from
processing) vs. mechanical properties correlations will help a more correct definition, also inside National and International
Standards, of the characteristic properties of casting alloys, which, actually, are given “for guidance only”, without really
supporting the engineering design. Conventional heat treatment and innovative treatment technologies, such as Liquid Hot
Isostatic Pressing (LHIP) are strongly growing their role in Aluminium Foundry: their potential will be also considered and
implemented into the integrated numerical code. The development of an optimisation module working under an integrated
approach with simulation code will allow a fast set up of the most suitable casting parameters and will help to have minor
amount of defects inside the component as an added value to feasibility. Virtual optimisation of the process will reduce to
the minimum the expensive and time consuming “test and trial” iterations to a minimum. Foundry men experience will
never be neglected, but such a tool can substantially support the decisions to be taken at a work shop level.

Department of Management Engineering
Period: 01/09/2002 → 01/08/2005
Number of participants: 3
Project participant:
Bellini, Anna (Intern)
Thorborg, Jesper (Intern)
Project Manager, organisational:
Hattel, Jesper Henri (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 1,700,000.00 Danish Kroner
Project

Innovation in the acting
Department of Management Engineering
Period: 01/09/2002 → 21/11/2008
Number of participants: 5
Phd Student:
Hallgren, Erik Wagner (Intern)
Supervisor:
Hansen, Claus Thorp (Intern)
Main Supervisor:
Clausen, Christian (Intern)
Examiner:
Bonke, Sten (Intern)
Gertsen, Frank (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU, Samfinansiering
Project: PhD

Microstructure stability of high temperature components for gas turbines
Department of Management Engineering
Period: 01/09/2002 → 01/09/2005
Number of participants: 1
Project Manager, organisational:
Dahl, Kristian Vinter (Intern)

Financing sources
Numerical Modelling of Laser Beam welding of Aluminium Alloy-Steel Joints

A significant trend is noticed in automotive industry towards a wider use of aluminium and aluminium alloys (AA). They have great specific strength and a high corrosion resistance allowing the design of lightweight constructions with excellent mechanical properties. In this context, the demand for laser welding of the material combination of aluminium alloys with steel (AA/St) has increased. However, laser beam welding (LBW) desired for longer AA/St joints or more complex joints (e.g. car door/hinge or multiple sheet structures in car bodies) is still difficult on account of the formation of extreme brittle compounds at the intermetallic interface. Controlling and predicting this formation is at present very difficult due to the current lack of understanding of the involved solidification and transport phenomena in the weld pool.

The aim of the project is the development of a numerical model of deep penetration laser beam welding of the material combination steel/aluminium alloys. It will allow the prediction of: thermal cycle in fusion zone and intermetallic interface-formation of intermetallic phase (brittle compounds AlxFeY)-shape of the seam

A completely new approach will be applied to evaluate the solidification phenomena at the interface phase between the aluminium and steel part considering the complex multi-phase heat transfer problem and the fluid flow of a binary mixture. The basis of the algorithm will be a finite volume discretisation of the conservation equations of energy, mass and momentum, of the minimisation of surface energy and of the thermo-metallurgical phenomena. The extreme fine spatial discretisation necessary to resolve the intermetallic layer will be realised employing a composite grid technique. Although the project has a focus on the industrial aspect, the main content of the project is fundamental research at high scientific level. The development of the model describing the physics of the complex non-linear problem and of an efficient numerical algorithm for the underlying large-scale discretisation is the main task of the project. Considering the complexity of the problem, it cannot be expected to reach the development of a complete industrial simulation tool within the two years frame of the project. But it is expected that the improvement of the understanding of the phenomena will make a sound foundation for such a development.

Department of Management Engineering

Period: 01/09/2002 → 01/08/2004
Number of participants: 2
Project participant:
Weiss, Dietmar (Intern)
Project Manager, organisational:
Hattel, Jesper Henri (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,080,000.00 Danish Kroner

Review of Occupational Safety and Health Regional Activities in Southern Africa

A Review of Occupational Safety and Health Regional Activities in Southern Africa funded under the DANIDA/IL0 framework agreement on technical cooperation.

Department of Management Engineering

NIRAS A/S
Period: 01/09/2002 → 01/06/2003
Number of participants: 2
Project participant:
Jørgensen, Claus (Intern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 243,000.00 Danish Kroner

Unges valg og visioner om arbejdsliv og familieliv i relation til ingeniøruddannelse og ingeniørarbejde

Department of Management Engineering
Young people's choices in relation to engineering education and engineering jobs

Young people's choices in relation to engineering education and engineering jobs. Objective The aim of the project is to investigate the impact of work/life balance on young people's choice of education, job, and career in the field of engineering. Research has shown that especially young women fear that a job and career as an engineer cannot be combined with their hope of a good family life. The philosophy of the project The project will describe young people's notions of their (possible future) work as engineers, and develop their visions of a good working life and a good family life. On the basis of concrete visions of work and family, the dilemmas between the two spheres will be worked out. Other factors will be investigated too, e.g. job content and salary. "Young people" are defined as men and women at different stages in life, which (eventually) lead to engineering jobs. The target groups are: High school students Engineering students Young masters of engineering Young masters of engineering with newly established families The design of this study is based on a hypothesis that young people make their choice of education, job, and career without much knowledge or (especially) any concrete ideas of their own wishes for the future. Therefore a survey on their attitudes is less interesting. Methodology Groups of 15 persons will be selected from the four target groups. The individual group will be rather homogenous in relation to age and life experiences. The groups will represent various life-experiences and therefore various conditions for making choices. At the same time, the four groups simulate the process of one person going through his or her life-stages. In total, eight groups will be formed on the base of the young people's willingness to participate. Future workshops (one day/twice) and group discussions will be conducted in each group, in order to: • Investigate young people's notions and expectations of their (possible) future working life and family life. • Develop their visions of a good working life and their vision of a good family life. The visions should be made concrete. • Discuss practicable good balances between work visions and family visions, and also the dilemmas and conflicts between the two. • Discuss the impact of the balance between work visions and family visions in relation to future and present choices of education, job, and career.

Department of Management Engineering
Period: 01/08/2002 → 01/01/2005
Number of participants: 2
Project participant:
Kring, Camilla (Intern)
Møller, Niels (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 1,300,000.00 Danish Kroner
Project
**The Effect of Cryogenic Treatment on Structural and Phase Transformations in Iron Martensite**

Department of Management Engineering  
Period: 01/07/2002 → 05/10/2006  
Number of participants: 5  
PhD Student:  
Stojko, Allan (Intern)  
Main Supervisor:  
Somers, Marcel A. J. (Intern)  
Examiner:  
Pantleon, Karen (Intern)  
Hoffmann, Franz (Ekstern)  
Slycke, Jan T. (Ekstern)

**Financing sources**  
Source: Forskningsprojekter - Andre ministerier og styrelser  
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser  
Amount: 780,000.00 Danish Kroner

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**Renewable energy for the transport sector using biofuels as energy carrier**

Technical University of Denmark  
Department of Transport  
Period: 19/06/2002 → 01/01/2008  
Number of participants: 1  
Acronym: REBECA  
Project participant:  
Figueroa Meza, Maria Josefina (Ekstern)

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**Evaluation of local and regional environmental networks**

A number of Danish local and regional environmental networks with companies and governmental authorities are analysed with respect to their impact, including the potentials in relation to product oriented environmental policy and market oriented environmental policy.

Department of Management Engineering  
Marianne Forman Aps  
Teknologisk Institut  
Period: 01/06/2002 → 01/04/2003  
Number of participants: 3  
Project participant:  
Marianne Forman (Ekstern)  
Merete Nørby (Ekstern)  
Project Manager, organisational:  
Jørgensen, Michael Sagaard (Intern)

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**Optimering af multimodale transportsystemer**

Department of Transport
ENLUB Development of new, environmentally acceptable lubricants, tribological tests and models for European sheet forming industry

Objective: The European sheet forming industries are facing considerable problems due to legal requirements of introducing environmentally acceptable lubricants as substitutes for the present hazardous/toxic ones. The objectives of this project are to develop new environmentally acceptable lubricants and an approach for prediction or prevention of lubricant film breakdown in sheet forming operations to facilitate a shift in the European industry towards environmentally acceptable lubricants. These objectives will be achieved by developing new environmentally acceptable lubricants based on pine oils and dry-film polymers, a system of experimental tests for sheet forming tribology combined with numerical modelling of lubricant film breakdown, which are integrated into a design support system. The expected output are new lubricants and a combined experimental and theoretical approach for prediction or prevention of lubricant film breakdown.

Micro/Nano Manufacturing

Within the last few years we have seen a growing tendency that many of the products are getting smaller and smaller. This is the case for products which we use both privately and in industry. This miniaturization is often characterized by a strong integration of micro mechanics and micro electronics. It is a continuously increasing challenge to create the operational basis for an industrial production of microtechnological products. As the products through product development processes are made applicable to a large number of customers, the pressure in regard to developing production technologies that make it possible to produce the products at a reasonable price and in large numbers is growing. These two demands further point at the use of metal, polymers and ceramics (or combinations of these) as materials to be used for microtechnological components and products. In the light of this development IPL has established a cross-disciplinary research programme with the purpose of creating an industrial production basis for microtechnological products/components through technology and product development. Thus the discipline of Micro/Nano Manufacturing at IPL can be defined as the activities that enable an industrial production of components within the dimensional scale of micrometers and nanometers. The components themselves may be of these dimensions, but also larger components with functional characteristics within the micrometer/nanometer area are included as an essential part of the activities. The driving force of the development is miniaturization. IPL will primarily focus on industrial production of components in metal,
polymers and ceramics.

Department of Management Engineering
Period: 01/05/2002 → 01/05/2007
Number of participants: 4
Project participant:
Hansen, Hans Nørgaard (Intern)
Alting, Leo (Intern)
Gegeckaite, Asta (Intern)
Bissacco, Giuliano (Intern)

Financing sources
Source: Gaver, Private danske Andre private
Name of research programme: Gaver, Private danske Andre private
Amount: 15,000,000.00 Danish Kroner

Good Practices in Nordic Innovation Policies
The main objective of the project ("GoodNIP") is to develop a survey and an analysis of Nordic innovation policy instruments directly or indirectly targeting small and medium sized enterprises. The project will provide Nordic policy makers with information to be used in the development of new or adjusted policy instruments on a national or Nordic level.

Department of Management Engineering
Center for Teleinformation
STEP
VINNOVA
VTT - Technical Research Centre of Finland
RANNIS
Period: 01/03/2002 → 01/03/2003
Number of participants: 8
Project participant:
Edwards, Kasper (Intern)
Jensen, Søren Chrstrup (Intern)
Koch, Per (Ekstern)
Larsson, Staffan (Ekstern)
Luukkonen, Terttu (Ekstern)
Finnbjörnsson, Thorvald (Ekstern)
Jensen, Søren Chrstrup (Ekstern)
Project Manager, organisational:
Pedersen, Jørgen Lindgaard (Intern)

Financing sources
Source: Forsk. Andre offentlige og private - Nordiske
Name of research programme: Forsk. Andre offentlige og private - Nordiske
Amount: 628,695.00 Danish Kroner

Processes for Nanostructuring of Plastic Parts for Biological and Optical Applications
Department of Management Engineering
Period: 01/03/2002 → 08/11/2006
Number of participants: 6
Phd Student:
Pranov, Henrik (Intern)
Supervisor:
Larsen, Niels Bent (Intern)
Main Supervisor:
Rasmussen, Henrik K. (Intern)
Examiner:
Szabo, Peter (Ekstern)
Cristiansen, Jesper de Claville (Ekstern)
Plackett, David (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Environmental cost of road traffic
Department of Transport
Period: 28/02/2002 → 31/08/2004
Number of participants: 1
Project ID: 552-35060
Project Manager, organisational:
Kronbak, Jacob (Intern)

Financing sources
Source: Program. Andre statslige danske - Miljø
Name of research programme: Program. Andre statslige danske - Miljø
Amount: 108,000.00 Danish Kroner
Project

Ledelse, arbejdsliv og arbejdsmiljøarbejde i vidensintensive virksomheder
Department of Management Engineering
Period: 01/02/2002 → 15/08/2007
Number of participants: 6
Phd Student:
Ipsen, Christine (Intern)
Supervisor:
Jensen, Per Langaa (Intern)
Main Supervisor:
Møller, Niels (Intern)
Examiner:
Sørensen, Lene Tolstrup (Intern)
Björkman, Torsten (Ekstern)
Laustsen, Susse (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Solidification and Microstructures in Thin Walled Ductile Iron
Department of Management Engineering
Period: 01/02/2002 → 09/01/2006
Number of participants: 5
Phd Student:
Pedersen, Karl Martin (Intern)
Main Supervisor:
Tiedje, Niels Skat (Intern)
Examiner:
Hansen, Preben Nordgaard (Ekstern)
Lacaze, Jacques (Ekstern)
Svensson, Ingvar L. (Ekstern)

Financing sources
Interaction between liberalised energy markets
The linkages between the power, natural gas and district heat sectors are examined and the consequences of the liberalisation are analysed. The changes in incentives for different players in energy market are described and especially integration of natural gas distribution and CHP production is analysed with respect to regulatory challenges and possible welfare impacts. The project also deals with bundling of energy commodities and the potential threat to small customers from such bundling practises.

Department of Management Engineering
Risø National Laboratory for Sustainable Energy

Anvendt KommunalForskning
Period: 01/01/2002 → 31/12/2003
Number of participants: 3
Market structure, Power market integration, Gas
Project participant:
Pade, Lise-Lotte (Intern)
Fristrup, Peter (Intern)
Project Manager, academic:
Klinge Jacobsen, Henrik (Intern)

Relations
Publications:
Samspillet mellem de liberaliserede energimarkeder
Liberalisation of integrated energy markets and market power issues
Integrated energy markets and varying degrees of liberalisation: Price links, bundled sales and CHP production exemplified by Northern European experiences
Project

Development of an indicator system for material flow, resource flow and efficiency and waste flows
Indicator systems for material flows and resource efficiency is discussed and proposals for the development of a Danish system is developed.

Department of Management Engineering
Period: 01/01/2002 → 01/04/2005
Number of participants: 3
Project participant:
Christensen, Toke Haunstrup (Intern)
Røpke, Inge (Intern)
Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)

Financing sources
Source: Forskningsprojekter - Miljø- og Energimisteriet
Name of research programme: Forskningsprojekter - Miljø- og Energimisteriet
Amount: 200,000.00 Danish Kroner
Project

High Temperature Corrosion
Investigation of components subjected to high temperature corrosion in power plants.

Department of Management Engineering
Period: 01/01/2002 → 01/12/2004
Number of participants: 1
Project Manager, organisational:
Montgomery, Melanie (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
**Improving interaction between NGOs, science shops and universities: Experiences and expectations**

The INTERACTS project examines the experiences and expectations of NGOs towards universities and intermediaries like science shops in order to draw out policy implications for future co-operation. The projects involves around 20 case studies from six different countries about the impact of science shops projects and scenario workshops discussing the expectations from NGOs, universities, researchers, students, policy makers and science shops to future co-operation.

**Department of Management Engineering**

Gheorghe Asachi Technical University of Iasi

Wissenschaftsladen Wien

University of Liverpool

Liverpool Hope University

Institut FBI

PaxMed International, LLC

Technical University of Berlin

Period: 01/01/2002 → 01/12/2003

Number of participants: 10

Project participant:

Brodersen, Søsser (Intern)

Christensen, Toke Haunstrup (Intern)

Carmen Teodosiu (Ekstern)

Michael Straehle (Ekstern)

David Hall (Ekstern)

Irene Hall (Ekstern)

Andrea Gnaiger (Ekstern)

Alain Galbout (Ekstern)

Wolfgang Endler (Ekstern)

Project Manager, organisational:

Jørgensen, Michael Søgaard (Intern)

**Financing sources**

Source: Udendør rammen

Name of research programme: Ukendt

Amount: 270,000.00 Danish Kroner

Project

**Materialeproblemer i affaldskedler**

Department of Chemistry

Department of Management Engineering

Elsam A/S

Energi E2 A/S

Barbcock & Wilcox Vølund A/S

FLS Miljø A/S

Mineral Development International

Period: 01/01/2002 → 31/12/2006

Number of participants: 8

Project ID: PSO no. 4104

Project participant:

Bjerrum, Niels J. (Intern)
**Metrology of Microtechnological Components**

Department of Management Engineering  
Period: 01/01/2002 → 10/06/2005  
Number of participants: 6  
PhD Student:  
Bariani, Paolo (Intern)  
Supervisor:  
Hansen, Hans Nørgaard (Intern)  
Main Supervisor:  
De Chiffre, Leonardo (Intern)  
Examiner:  
Wilkening, G. (Ekstern)  
Andreasen, Jan Lasson (Intern)  
Savio, Enrico (Ekstern)  

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: DTU-lønnet stipendie  
Project: PhD

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**Modelling Material Flow in manufacturing Processes with Eulerian Methods**

The aim of the project is to develop new, more accurate and much faster numerical algorithms for the simulation of metal flow in processes involving metal forming. This will be carried out in the framework of 3-D Finite Volume (FV) formulation. It is expected that this new formulation will reduce the necessary CPU-time dramatically compared to the traditional Finite Element (FE) methods. These are often in 3-D analysis of metal forming accompanied by very large CPU-times due to remeshing in which the FE-mesh distorts together with the geometry while attempting to follow the deformation of the solid material (Lagrangian formulation). Moreover, the accuracy of the FE-solution can be severely damaged by distorted elements. It is the idea of the project to overcome these problems by applying a 3-D finite volume formulation based on an Eulerian approach where the mesh is fixed and the metal flows through it. The FV method based on a Eulerian formulation is common practice for material flow simulations in a wide range of processes, e.g. mould filling in casting, melt pool modelling in welding and droplet atomisation in spray forming. Metal forming processes typically involves large material flow as well. The proposed Eulerian Finite Volume method is particularly suited for simulating the large material deformations appearing in metal forming operations, and at the same time eliminates the need for volume remeshing techniques, commonly considered the main bottleneck in 3-D forming simulations based on Lagrangian FE formulations. Due the difficulties outlined, 3-D forming simulation based on the conventional FE technology is still not being readily implemented in the metal forming industry, and application and translation of 3-D simulation results into forging practice have shown very little success while 2-D analysis today is commonly applied in industry. Considering the complexity of the problem it is by no means expected to reach the development of a complete industrial simulation tool within the four years frame of the project, but it is expected that a sound foundation for such a development will be made.

Department of Manufacturing Engineering  
Period: 01/01/2002 → 30/08/2006  
Number of participants: 1  
Project Manager, organisational:  
Hattel, Jesper Henri (Intern)

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Cappeln, Frederik Vilhelm (Intern)  
Larsen, Ole Hede (Ekstern)  
Tiedje, Niels (Ekstern)  
Jensen, Jørgen Peter (Ekstern)  
Matthiesen, Henrik Dam (Ekstern)  
Iversen, Steen B. (Ekstern)  
Frederiksen, Jens (Ekstern)
Modelling Metal Forming Processes with a 3-D Eulerian Finite Volume Method

The aim of the project is to develop new, more accurate and much faster numerical algorithms for the simulation of metal flow in processes involving metal forming. This will be carried out in the framework of 3-D Finite Volume (FV) formulation. It is expected that this new formulation will reduce the necessary CPU-time dramatically compared to the traditional Finite Element (FE) methods. These are often in 3-D analysis of metal forming accompanied by very large CPU-times due to remeshing in which the FE-mesh distorts together with the geometry while attempting to follow the deformation of the solid material (Lagrangian formulation). Moreover, the accuracy of the FE-solution can be severely damaged by distorted elements. It is the idea of the project to overcome these problems by applying a 3-D finite volume formulation based on a Eulerian approach where the mesh is fixed and the metal flows through it. The FV method based on a Eulerian formulation is common practice for material flow simulations in a wide range of processes, e.g. mould filling in casting, melt pool modelling in welding and droplet atomisation in spray forming. Metal forming processes typically involves large material flow as well. The proposed Eulerian Finite Volume method is particularly suited for simulating the large material deformations appearing in metal forming operations, and at the same time eliminates the need for volume remeshing techniques, commonly considered the main bottleneck in 3-D forming simulations based on Lagrangian FE formulations. Due the difficulties outlined, 3-D forming simulation based on the conventional FE technology is still not being readily implemented in the metal forming industry, and application and translation of 3-D simulation results into forging practice have shown very limited success while 2-D analysis today is commonly applied in industry. Considering the complexity of the problem it is by no means expected to reach the development of a complete industrial simulation tool within the four years frame of the project, but it is expected that a sound foundation for such a development will be made.

Department of Management Engineering
Period: 01/01/2002 → 01/12/2005
Number of participants: 2
Project participant:
Li, Yongbao (Ekstern)
Project Manager, organisational:
Hattel, Jesper Henri (Intern)

Nielsen, Morten Storgård (Intern)
Hancock, Michael Halloway (Ekstern)
Andersen, Niels Hessel (Intern)
The learning safety organization
An analysis of the possibilities of developing the safety organization in the direction of a learning organization. It is based on empirical data from a network of 9 companies. The theoretical framework is organizational theory focusing on learning and political process.

Department of Management Engineering
Center for Alternativ Samfundsanalyse
Kubix ApS
Period: 01/01/2002 → 01/04/2004
Number of participants: 4
Project participant:
Jensen, Per Langaa (Intern)
Hans Hvenegaard (Ekstern)
Pernille Bottrup (Ekstern)
Project Manager, organisational:
Hasle, Peter (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 249,000.00 Danish Kroner

Working Environment Standards for Tendering of Public Bus Transport
The aim of the project is to develop standards for integration of the working environment in tendering of public bus transport. The project is following three tendering processes in order to identify the necessary working environment requirements and how they could be secured. It is also studying good practice for integration of the working environment in existing contracts.

Department of Management Engineering
Center for Alternativ Samfundsanalyse
Period: 01/01/2002 → 01/04/2004
Number of participants: 3
Project participant:
Wiegmann, Inger-Marie (Ekstern)
Hvenegaard, Hans (Ekstern)
Hasle, Peter (Intern)

Financing sources
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 76,760.00 Danish Kroner

Workplace Learning
The research programme 'Workplace Learning' in collaboration with the Ministry of Education, Learning Lab Denmark has established a research programme on learning and competence development in the workplace with special focus on people with short and shorter educational backgrounds.

Department of Management Engineering
Aalborg University
Roskilde University
Learning Lab Denmark
Undervisningsministeriet
Kubix ApS
University of Southern Denmark
Period: 01/01/2002 → 01/12/2004
Number of participants: 7
Project participant:
Karl Brian Nielsen (Ekstern)
Helge Hvid (Ekstern)
Henrik Nietschke (Ekstern)
Jan Reitz (Ekstern)
Pernille Bottrup (Ekstern)
Henrik Gordon Petersen (Ekstern)
Project Manager, organisational:
Andersen, Vibeke (Intern)

Financing sources
Source: Sam.arb.aftaler - Statslige danske
Name of research programme: Sam.arb.aftaler - Statslige danske
Amount: 125,478.00 Danish Kroner


department of management engineering

Ensidigt gentaget arbejde - arbejde under forandring
Department of Management Engineering
Period: 01/12/2001 → 29/01/2007
Number of participants: 5
Phd Student:
Hansen, Nanette Juhler (Intern)
Main Supervisor:
Møller, Niels (Intern)
Examiner:
Broberg, Ole (Intern)
Nielsen, Kurt Aagaard (Ekstern)
Riis, Jens Ove (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Anden sektorministeriel finans
Project: PhD

Environmental Management Perspectives
The research project is focussing on the role of environmental management systems and policies in different countries.

Department of Management Engineering
Period: 01/12/2001 → 01/12/2004
Number of participants: 1
Project Manager, organisational:
Jørgensen, Ulrik (Intern)

Integration of Environmental Life Cycle Information Into Cad-Systems for Support of Design for Environment
Department of Management Engineering
LCA-center Denmark
LCA Center Denmark is a knowledge centre for life cycle assessments (LCA) and the life cycle approach. The centre promotes product-orientated environmental strategies in private and public companies by assisting them in implementing life cycle thinking. LCA Center Denmark is partly funded by the Danish Environmental Protection Agency and is managed by Institute for Product Development (IPU), COWI and dk-TEKNIK ENERGY & ENVIRONMENT. The aims of LCA Center Denmark are: * To assist companies that have a need for environmental assessment of products in a life cycle perspective. * To secure that the development of tools and methods for the life cycle approach in Denmark builds on a solid and scientific basis. * To promote product-orientated environmental work in companies (Life Cycle Assessments and other Environmental Management Systems). * To maintain the existing cooperation between Danish LCA stakeholders.

Pesticide dispersion model
Development of LCA inventory model for pesticide emissions from cultivation of field crops

Reduction of repetitive work
A substantial part of the jobs in Danish industries can still be characterised as taylorised work, because the work is monotonous and repetitive and the employees’ responsibility is limited. In 1993 the Danish Action Plan to reduce repetitive work was introduced, and in 2001 this action plan was evaluated. This ph.d.project goes futher with the investigation on how to reduce repetitive work in Danish companies.
**Financing sources**
Source: Forskningsprojekter - Andre ministerier og styrelser
Name of research programme: Forskningsprojekter - Andre ministerier og styrelser
Amount: 1,300,000.00 Danish Kroner

**Strategies for environment, work environment and social issues in textile companies**
A handbook supporting enterprises in the textile sector in developing strategies for environment, work environment and social issues is developed.

Department of Management Engineering
Nordic Consulting Group
Marianne Forman Aps
Period: 01/12/2001 → 01/07/2003
Number of participants: 3
Project participant:
Huniche, Mahad (Ekstern)
Forman, Marianne (Ekstern)

**Financing sources**
Source: Forskningsprojekter - Miljø- og Energiministeriet
Name of research programme: Forskningsprojekter - Miljø- og Energiministeriet
Amount: 130,000.00 Danish Kroner

**Prevention of Accidents in Small Enterprises**
The objective of the project is to develop preventive methods tailored to small enterprises. The basic understanding is that accidents in small enterprises are rare events, and the learning experience is limited. But stories about near misses and risky situations are much more frequent. The project is implemented in cooperation with an occupational health service, and another important objective is to fit the methods to the available resources in the service.

Department of Management Engineering
Center for Alternativ Samfundsanalyse
BST Sjælland
Period: 01/10/2001 → 01/04/2004
Number of participants: 5
Project participant:
Limborg, Hans Jørgen (Ekstern)
Grinderslev, Edvin (Ekstern)
Hvenegaard, Hans (Ekstern)
Wibroe, Lone (Ekstern)

**Financing sources**
Source: Indtægtsdækket virksomhed UK 90
Name of research programme: Indtægtsdækket virksomhed UK 90
Amount: 165,656.00 Danish Kroner

**Gas-Assisted Injection moulding of one and Multi Component Plastic Parts**
Department of Management Engineering
Period: 15/09/2001 → 10/06/2005
Number of participants: 7
Phd Student:
Eriksson, Torbjörn Gerhard (Intern)
Supervisor:
Hassager, Ole (Intern)
Kjær, Erik Michael (Intern)
Main Supervisor:
Rasmussen, Henrik K. (Intern)
Examiner:
Szabo, Peter (Ekstern)
Larsen, Niels Bent (Intern)
Plackett, David (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

OK-korridoren, delprojekt 1
Department of Transport
Period: 13/09/2001 → 31/12/2006
Number of participants: 1
Project ID: 491-35056
Project Manager, organisational:
Leleur, Steen (Intern)

Financing sources
Source: Forsk. Andre offentlige og private - Nordiske
Name of research programme: Forsk. Andre offentlige og private - Nordiske
Amount: 116,628.00 Danish Kroner

Consumption - perspectives from ecological economics
The aim of the project is to provide an overview of different approaches to the study of consumption and environment with relation to the field of ecological economics. The project is intended to result in an anthology to be published by Edward Elgar.

Department of Management Engineering
University of Hohenheim
Period: 01/09/2001 → 01/12/2004
Number of participants: 2
Project participant:
Lucia Reisch (Ekstern)
Project Manager, organisational:
Røpke, Inge (Intern)

Gas-Assisted Injection Moulding of one and multi-component parts
Gas-assisted injection moulding (GAIM) is a two-component process, where a mould is filled partly with a polymer melt (a thermoplastic material), followed by the injection of inert gas into the core of the polymer melt. Parts produced by gas-assisted injection moulding are hollow. Consequently they use fewer resources than solid parts produced by conventional injection moulding. Complex parts consisting of both thick and thin sections can be produced (unlike in conventional injection moulding) with lower material usage, lower machine investment, better surface finish (better quality) and shorter cycle (production) times, compared to conventional injection moulding. In this project it is the intention to develop two well-monitored equipments. One, allowing the experimental investigation of the gas-polymer displacement process, developing the internal surface in a product. The other equipment, based on a simple compression moulding technique, should allow the investigation of the replication of the mould surface in the plastic, incorporating an insert with well-defined microstructures in the mould. The equipments should be prepared for later multi component displacement investigations, where more than one polymer is displaced simultaneously. It is the major target of this Ph.D. project to gain a more thorough understanding of the underlying physical processes responsible for the formation of the inner and outer surface in a plastic product. In order to gain understanding of the polymer melt distribution in the GAIM process, we have to resort to a numerical model of the process. Modelling of the GAIM process, with respect to the real fluid behaviour of the polymer melt (polymer melts are highly complex fluids), even in a simple geometry have not yet been resolved. A more detailed understanding of flow properties and the influence of material parameters, e.g. the rheology is needed. It is the purpose to model the combined flow of a gas and a highly viscous polymer melt and the filling of the microstructures in the mould.
surface numerically, with the Finite Element Method, to obtain an understanding of both filling processes.

Department of Management Engineering
Period: 01/09/2001 → 01/09/2004
Number of participants: 2
Project participant:
Erikson, Torbjörn (Ekstern)
Rasmussen, Henrik K. (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,400,000.00 Danish Kroner

Ingeniøren som facilitator

Department of Management Engineering
Period: 01/09/2001 → 02/12/2009
Number of participants: 5
Phd Student:
Christensen, Anne Broen (Intern)
Main Supervisor:
Rasmussen, Lauge Baungaard (Intern)
Examiner:
Sørensen, Lene Tolstrup (Intern)
Brandt, Eva (Intern)
Nielsen, Kurt Aagaard (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Low temperature surface hardening of austenitic stainless steel
The research plan is subdivided in: a. assessment of the thermodynamics of the S-phase b. assessment of the growth and decomposition kinetics of the S-phase c. determination of lattice strains in S-phase layers d. investigation of the relation between hardness, composition and residual stresses e. investigation of wear performance f. investigation of electrochemical properties

Department of Management Engineering
Period: 01/09/2001 → 01/09/2004
Number of participants: 2
Project participant:
Christiansen, Thomas Lundin (Intern)
Project Manager, organisational:
Somers, Marcel A. J. (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 2,000,000.00 Danish Kroner

Nittrering af rustfritstålg - dannelse af et slid og korrosionsbestandigt overfladelag

Department of Management Engineering
Period: 01/09/2001 → 21/01/2005
Number of participants: 5
Phd Student:
Christiansen, Thomas Lundin (Intern)
Main Supervisor:
Somers, Marcel A. J. (Intern)
Examiner:
Ståhl, Kenny (Intern)
Mittemeijer, Eric Jan (Ekstern)
Nilsson, Jan-Olof Krister (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Forskningsrådsstipendium
Project: PhD

**Testing and Modeling of Machine Properties in Resistance Welding**
Department of Management Engineering
Period: 01/09/2001 → 09/11/2004
Number of participants: 6
PhD Student:
Wu, Pei (Intern)
Supervisor:
Zhang, Wenqi (Intern)
Main Supervisor:
Bay, Niels Oluf (Intern)
Examiner:
Klæstrup Kristensen, Jens (Intern)
De Chiffre, Leonardo (Intern)
Laursen, Birthe (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

**Udvikling af metoder til fremme af dialog, demokratisk handlekompetence og nye initiativer inden for den økologiske fødevaresketor**
Department of Management Engineering
Number of participants: 2
PhD Student:
Boll, Martin Harring (Intern)
Main Supervisor:
Kristensen, Niels Heine (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

**Biopack**
BIOPACK

Department of Management Engineering
Period: 01/08/2001 → 01/07/2004
Number of participants: 3
Project participant:
Hansen, Hans Nørgaard (Intern)
Gegeckaitė, Asta (Intern)
Project Manager, organisational:
Kjær, Erik Michael (Intern)

**Financing sources**
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Kemikalieorienteret produktmiljøvurdering

Department of Management Engineering
Period: 01/08/2001 → 18/05/2005
Number of participants: 5
Phd Student:
Birkved, Morten (Intern)
Main Supervisor:
Hauschild, Michael Zwicky (Intern)
Examiner:
Jørgensen, Sven Erik (Ekstern)
McKone, Thomas E. (Ekstern)
Sørensen, Peter (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Eksternt EU-finansieret
Project: PhD

Modelling and optimisation of high speed milled surfaces

Department of Management Engineering
Period: 01/08/2001 → 09/02/2005
Number of participants: 6
Phd Student:
Bissacco, Giuliano (Intern)
Supervisor:
Hansen, Hans Nørgaard (Intern)
Main Supervisor:
De Chiffre, Leonardo (Intern)
Examiner:
Wanheim, Tarras (Intern)
Fleischer, Jürgen (Ekstern)
Svenningsson, Inge (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Social shaping of local environmental activities

Local environmental initiatives are analysed with respect to their social shaping and their impact on the capacity for handling environmental aspects. The project covers projects in South Africa and Denmark and have links to similar projects with focus on Thailand.

Department of Management Engineering
University of the Witwatersrand
Period: 01/08/2001 → 01/12/2003
Number of participants: 2
Project participant:
Kerry Pile (Ekstern)
Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)

Ecological economics - a new perspective?
The field environment and economics has developed fast during the last twenty years. Neoclassical environmental economics has been dominant, but other currents have manifested themselves, e.g. ecological economics that has been
institutionalized in associations and journals. The project aims at contributing to the assessment of ecological economics: Is the field crystallizing as a special perspective in the field of environment and economics, and if this is the case, how can the perspective then be characterized.

Department of Management Engineering
Period: 01/07/2001 → 01/10/2004
Number of participants: 1
Project Manager, organisational: Rapke, Inge (Intern)

Financing sources
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 475,000.00 Danish Kroner

IT mgt
The purpose of this project is to establish administrative procedures for supporting all aspects of using IT-applications in an educational institution.

Department of Management Engineering
Period: 01/07/2001 → 01/12/2004
Number of participants: 4
Project participant:
Johannessen, Finn Boje (Intern)
Wilsleff, Samoel Di (Intern)
Nielsen, Martin Gilbert (Ekstern)
Project Manager, organisational: Pedersen, Morten Als (Intern)

Financing sources
Source: [Ordinær drift UK 10]
Name of research programme: Ukendt
Amount: 200,000.00 Danish Kroner

Centre for Logistics and Freight Transport
The Centre for Logistics and Freight Transport (CLG) is a multi-disciplinary research centre on logistics and freight transport. The Centre is headed by CTT. CLG is a cooperation between a number of Danish and international universities and companies. CLG is funded by The Danish Technical Research Council (STVF). The objective of the Centre is to strengthen the Danish research on logistics and transport. This is achieved through specific research projects and through networking activities within the center. A number of the research projects are multi-disciplinary. The scope of the Centre is to obtain an increased knowledge about the various stakeholders within the logistics and transport sector and to develop new methods and concepts which are applicable to the stakeholders. This includes organisational and management concepts as well as methods based on mathematical models in order to support the various stakeholders which briefly can be characterized as follows: Manufacturers and consumers of goods (transport users). Transporters (operators, forwarders, etc.). Transport infrastructure owner (public authorities, ports, airports, etc.). Public authorities (political means and control). National economics (derivated effects of the transport system and the external influences).

Department of Transport
Period: 25/06/2001 → 31/12/2006
Number of participants: 13
Acronym: CLG
Project ID: 421-35044
Project participant:
Madsen, Oli B.G. (Intern)
Leleur, Steen (Intern)
Overgård, Christian Hansen (Intern)
Rich, Jeppe (Intern)
Jørgensen, Rene Munk (Intern)
Larsen, Allan (Intern)
Pedersen, Michael Berliner (Intern)
Salling, Kim Bang (Intern)
Jensen, Anders Vestergaard (Intern)
Sørensen, Majken Vildrik (Intern)
Landex, Alex (Intern)
Holvad, Torben (Intern)
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 15,723,006.00 Danish Kroner
Project

National research activities and sustainable development
The project analysed national research activities focusing on sustainable development or aspects hereof in a number of EU-countries including Sweden, Belgium, Austria and Germany. Denmark was responsible for the case study on Sweden.

Department of Management Engineering
Austrian Research Center Seibendorf
Period: 01/06/2001 → 01/05/2002
Number of participants: 3
Project participant:
Christensen, Toke Haunstrup (Ekstern)
Matthias Weber (Ekstern)
Jørgensen, Michael Sagaard (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 100,000.00 Danish Kroner
Project

Beskyttelse mod metallisk oxidation
Department of Management Engineering
Period: 01/05/2001 → 18/08/2004
Number of participants: 7
Phd Student:
Hansson, Anette Nørgaard (Intern)
Supervisor:
Linderoth, Søren (Intern)
Mogensen, Mogens Bjerg (Intern)
Main Supervisor:
Somers, Marcel A. J. (Intern)
Examiner:
Ståhl, Kenny (Intern)
Norby, Truls (Ekstern)
Østergård, Maria Jose Landeira (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Risø (Løn)
Project: PhD

EUROMET.L-S11 comparison on surface texture
The measurement of roughness of technical surfaces is important in research and for industry. There are a lot of 2D roughness parameters that are defined and standardized by ISO. Calibration standards can be used to calibrate the instruments and ensure traceability to the SI unit of length. Most of those used are traced back to SI by national metrology institutes (NMI), which should participate in international comparison to proof the validation of measurement results.
Sixteen NMi from the EUROMET region carried out measurements on standards between May 2001 and March 2003. The set of standards used complied with ISO 5436-1 and consisted of one depth-setting standard of type A, three calibration standards of type C, three standards of type D1 and one standard of type D2. The participants aimed to measure 50 surface roughness parameters. These included the most interesting parameters in the field of surface texture, i.e. Pt, D, Ra, Rz, Rmax, RSm and Rk. Additionally, for the first time, a comparison using software gauges of type F1 that complied with ISO 5436-2 was made, taking into consideration the fact that they have an important effect on the results obtained. A considerable number of the over 600 measurement results did not fulfil the En <1 criterion. Some of the problems are related to the determination of the depth of grooves on the depth-setting standard. This was really not expected at the beginning of the comparison. Other problems are related to more complex parameters like RSm and Rk and their ambiguous definition in the written standards. The final report has been peer-reviewed and approved for publication by EUROMET, according to the provisions of the Mutual Recognition Arrangement (MRA).

Department of Management Engineering
Period: 01/05/2001 → 01/05/2004
Number of participants: 2
Project participant:
Andreasen, Jan Lasson (Intern)
Project Manager, organisational:
De Chiffre, Leonardo (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Project

Motivation and Burnout. A case study on the relationship of human motivation and burnout in human service work

Department of Management Engineering
Period: 01/05/2001 → 30/11/2003
Number of participants: 2
Phd Student:
Engelbrecht, Sunniva (Intern)
Main Supervisor:
Olsén, Peter (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskerakademiets Samfinansier
Project: PhD

Networking Nordic Laser Materials Processing Knowledge
The objective of the project is to create a web-based platform in which it is able to gather all relevant information related to laser materials processing in order to stimulate Nordic research collaboration as well as to provide a platform for the Nordic industry for receiving quick and efficient information on the topic. Further, it creates a good basis for efficient communication between the mentioned parties. Information covers all technical aspects related to laser materials processing as well as being an integrated technological ‘market place’ for discussions, promoting seminars and conferences etc. Also

Department of Management Engineering
FORCE Technology
Luleå University of Technology
Lappeenranta University of Technology
SINTEF
Technological Institute of Iceland
Period: 01/05/2001 → 01/09/2004
Number of participants: 7
Acronym: Nor-Las
Project participant:
Mortensen, Erling Dam (Intern)
Nielsen, Steen Erik (Ekstern)
Promoting the occupational health services’ efforts in relation to technological changes in enterprises
The occupational health service (OHS) in Denmark is only sparsely involved as adviser when technological changes take place in client enterprises. In order to promote the OHS efforts in this area, the work of OHS consultants has been studied in four cases of technological change. Instead of the two-dimensional expert – process consultant role we suggest a supplementary third role, the ‘political reflective navigator’. This role is suggested based on evidence from the cases and concepts from actor-network theory on technological development.

Department of Management Engineering
Period: 01/05/2001 → 01/08/2002
Number of participants: 2
Project participant:
Hermund, Ingelise (Intern)
Project Manager, organisational:
Broberg, Ole (Intern)

Accident Prevention
The purpose is to analyze the effect of the interaction between external and internal actors to develop a context based understanding of how accident prevention can be initiated.

Department of Management Engineering
Period: 01/04/2001 → 01/06/2004
Number of participants: 2
Project participant:
Dyhrberg, Mette Bang (Intern)
Project Manager, organisational:
Jensen, Per Langaa (Intern)

Arbejdsmiljø og læring- om muligheder og barrierer for læring i virksomhedens aktiviteter på arbejdsmiljøområdet.

Department of Management Engineering
Period: 01/04/2001 → 14/11/2005
Number of participants: 6
Phd Student:
Ledskov, Annette (Intern)
Supervisor:
Rasmussen, Lauge Baungaard (Intern)
Main Supervisor:
Corrosion Monitoring in District Heating Systems
The objective of the project is to implement a reliable corrosion monitoring technique for determining corrosion rate and state of corrosion development in district heating systems. A measurement unit is being installed in district heating systems and techniques tested for improved quality control.

Department of Management Engineering
FORCE Technology
VN Instruments Ltd
Islands Byggeforsknings Instit
Högskolen i Stavanger
Korrosionsinstituttet
Materials Science and Rock Eng
Period: 01/04/2001 → 01/03/2004
Number of participants: 8
Project participant:
Albæk, Michael (Intern)
Kate Nielsen (Ekstern)
Lars Vendelbo Nielsen (Ekstern)
Ragnheidur Inga Thorarinsdottir (Ekstern)
Tor Hemmingsen (Ekstern)
Magnus Nordling (Ekstern)
Oluf Forsen (Ekstern)
Project Manager, organisational:
Hilbert, Lisbeth Rischel (Intern)

Financing sources
Source: Forsk. Andre offentlige og private - Nordiske
Name of research programme: Forsk. Andre offentlige og private - Nordiske
Amount: 758,800.00 Danish Kroner

Metal dusting corrosion
The purpose of the present project is an investigation and assessment of the mechanisms that lead to corrosion degradation of Ni and Cr containing steels at elevated temperature in a carburizing environment.

Department of Management Engineering
Period: 01/04/2001 → 01/04/2004
Number of participants: 2
Project participant:
Emborg, Kristian (Intern)
Somers, Marcel A. J. (Intern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Amount: 225,300.00 Danish Kroner
**Operational Models and Information tools for Industrial applications of eco/TOXicological impact assessments**

OMNIITOX is a EU-project under the "Competitive and Sustainable Growth"-programme, running from 2001 to 2004. OMNIITOX will facilitate decision making regarding potentially hazardous compounds by improving methods and developing information tools necessary for impact assessment of toxic chemicals within Life Cycle Assessment (LCA) and (Environmental) Risk Assessment (E)RA.

Department of Management Engineering
Period: 01/04/2001 → 01/01/2005
Number of participants: 4
Project participant:
Larsen, Henrik Fred (Intern)
Birkved, Morten (Intern)
Olsen, Stig Irving (Intern)
Project Manager, organisational:
Hauschild, Michael Zwicky (Intern)

**Financing sources**
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 2,700,000.00 Danish Kroner

**START: network and development of competences in the organic food sector**
The aim of the project was to define the mechanisms and methods to enhance networking and entrepreneurship in the European organic food sector.

Department of Management Engineering
Period: 01/04/2001 → 01/06/2002
Number of participants: 1
Project Manager, organisational:
Rasmussen, Lauge Baungaard (Intern)

**Financing sources**
Source: Forskningsrådene - Andre
Name of research programme: Forskningsrådene - Andre
Amount: 171,000.00 Danish Kroner

**Strukturel optimering af støbte emner med numerisk modellering**

Department of Management Engineering
Period: 01/04/2001 → 01/04/2001
Number of participants: 2
Phd Student:
Andersen, Michael Nørgaard (Intern)
Main Supervisor:
Hattel, Jesper Henri (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

**Traffic Dynamic Assignment Modeling for Road Network & Optimization**

Department of Transport
Period: 01/04/2001 → 23/03/2006
Number of participants: 2
Phd Student:
Jia, Mei (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Offentlig finansiering
Project: PhD

**IMPRESS, Improvement of Precision in Forming by Simultaneous Modelling of Deflections in Workpiece-Die-Press System**

Department of Management Engineering
Period: 01/03/2001 → 01/02/2005
Number of participants: 1
Project Manager, organisational:
Arentoft, Mogens (Intern)

**Financing sources**
Source: Gaver, Private danske Andre private
Name of research programme: Gaver, Private danske Andre private
Amount: 100,000.00 Danish Kroner

**Modelling Distortions of Large, Thinwalled Light Alloy Alloy Castings**
The aim of the project is to develop and test new, innovative and fast numerical techniques for modelling thermomechanically induced distortions in large, complex light alloy parts. The goals are: Speeding up algorithms with an order of magnitude compared to conventional techniques, making it possible to simulate the manufacturing process of large complex parts at realistic computational times for industrial applications. Selecting and testing proper constitutive laws for prediction of distortions in light metal alloys, e.g. viscoplastic models. Testing various convergence criteria to ensure sufficiently accurate results for the analysis of macroscopic distortions Comparing different simulation techniques to recommend the most promising for commercialisation.

Department of Management Engineering
Period: 01/03/2001 → 01/03/2004
Number of participants: 2
Project participant:
Thorborg, Jesper (Intern)
Project Manager, organisational:
Hattel, Jesper Henri (Intern)

**Financing sources**
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,900,000.00 Danish Kroner

**Cryogenic treatment of tool steel**
Investigation of the effect of cryogenic treatment on microstructure stability in tool steel and ball bearing steel.

Department of Management Engineering
Period: 01/02/2001 → 01/04/2003
Number of participants: 4
Project participant:
Frandsen, Rasmus Berg (Intern)
Stojko, Allan (Intern)
Hansson, Anette Nørgaard (Intern)
Project Manager, organisational:
Somers, Marcel A. J. (Intern)

**Financing sources**
Source: Forsk. Andre offentlige og private - Udenlandske
Name of research programme: Forsk. Andre offentlige og private - Udenlandske
Amount: 71,600.00 Danish Kroner
**Miljøkommunikation i varekæder**

Department of Management Engineering  
**Period:** 01/02/2001 → 31/01/2003  
Number of participants: 2  
Phd Student:  
Frydendal, Jeppe (Intern)  
Main Supervisor:  
Hauschild, Michael Zwicky (Intern)

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Erhvervsforskerordningen  
Project: PhD

**Sustainable energy planning in Malaysia**

DANCED project for sustainable energy planning in Malaysia that focuses on capacity building in the field of environmental/energy modelling. The project included long working stays in Malaysia with collection of energy and macroeconomic data. Supporting the input-output modelling activities and the construction of a Social Accounting Matrix for Malaysia. Modelling the Malaysian economy with the GAMS software using a static Computable General Equilibrium model approach.

Department of Management Engineering  
Rambøll Danmark A/S  
Government of Malaysia  
PTM  
**Period:** 01/01/2001 → 31/12/2003  
Number of participants: 1  
Acronym: DANCED  
Project participant:  
Klinge Jacobsen, Henrik (Intern)

**Relations**

Publications:  
Energy models and development of energy scenarios  
Macro-economic modelling (top-down approach)  
Energy demand: Background - approaches to modelling future demand

**Kemikalieorienteret produktvurdering**

Department of Management Engineering  
**Period:** 01/01/2001 → 11/02/2005  
Number of participants: 5  
Phd Student:  
Larsen, Henrik Fred (Intern)  
Main Supervisor:  
Hauschild, Michael Zwicky (Intern)  
Examiner:  
Kusk, Kresten Ole (Intern)  
Chapman, Peter M. (Ekstern)  
Molander, Sverker (Ekstern)

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Anden sektorministeriel finans  
Project: PhD
**Produktmodellering i virksomhedsnetværk**

Department of Management Engineering  
Period: 01/01/2001 → 09/01/2006  
Number of participants: 5  
Phd Student:  
Malis, Martin (Intern)  
Main Supervisor:  
Hvam, Lars (Intern)  
Examiner:  
Jacobsen, Peter (Intern)  
Jensen, Lars Jepsen (Ekstern)  
Olsen, Rasmus Friis (Intern)  

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Samarbejdsaftalefinans  
Project: PhD

**Quality Management and Business Excellence development**  
The project includes research within the Quality Management/Business Excellence field focusing on:  
- Quality Management Principles and Practice, IAQ Research Project 16, International Academy for Quality, carried out by Scandinavian Universities: DTU (Project leader), NTNU, KTH, CHAL, LIN.  
- Development of Total Quality Management/Business Excellence - Strategies and methodologies for analyzing and developing TQM/BE, Self-evaluation principles and models, Continuous Improvements, Performance measurements and benchmarking  
- Quality Management - assessment, audit, certification, quality system requirements.

Department of Management Engineering  
Period: 01/01/2001 → 31/12/2008  
Number of participants: 1  
Project Manager, organisational:  
Hartz, Ove (Intern)  

**CLG: Virtual Center for Research in Logistics and Transportation of Goods**  
The purpose behind CLG is to strengthen the danish research within logistics and transportation of goods. At IPL a PhD project will be started at the beginning of year 2003. The aim of this project is to develop concepts and procedures to describe, analyse, evaluate, and develop production networks.

Department of Management Engineering  
Department of Transport  
Period: 01/12/2000 → 01/12/2006  
Number of participants: 2  
Project participant:  
Otto Anker Nielsen (Ekstern)  
Project Manager, organisational:  
Michelsen, Aage U (Intern)  

**Financing sources**  
Source: Forskningsrådene - STVF  
Name of research programme: Forskningsrådene - STVF  
Amount: 1,330,000.00 Danish Kroner  
Project

**Future profiles of engineering work and education**  
A case study based contribution to the discussion on engineering competence.

Department of Management Engineering  
Period: 01/12/2000 → 01/12/2003  
Number of participants: 2  
Project participant:
Godskesen, Mirjam Irene (Intern)  
Project Manager, organisational: Jørgensen, Ulrik (Intern)

**Financing sources**  
Source: Sam.arb.aftaler, Private danske - Fonde  
Name of research programme: Sam.arb.aftaler, Private danske - Fonde  
Amount: 233,000.00 Danish Kroner

**LCA and residual products**  
Life cycle inventory modelling for residual products from waste incineration  
Department of Management Engineering  
Period: 01/12/2000 → 01/12/2002  
Number of participants: 2  
Project participant:  
Hauschild, Michael Zwicky (Intern)  
Olsen, Stig Irving (Ekstern)

**LCA Malaysia**  
Implementation of life cycle assessment in Malaysian industry  
Department of Management Engineering  
Period: 01/12/2000 → 01/12/2002  
Number of participants: 3  
Project participant:  
Hauschild, Michael Zwicky (Intern)  
Poll, Christian (Ekstern)  
Project Manager, organisational:  
Jensen, Allan Herrstedt (Ekstern)

**SYNOPSIS**  
SYNOPSIS  
Department of Management Engineering  
Manufacturing Engineering  
Department of Mechanical Engineering  
Period: 01/12/2000 → 01/06/2006  
Number of participants: 4  
Project participant:  
Jørgensen, Ulrik (Intern)  
Yoshinaka, Yutaka (Intern)  
Project Manager, organisational:  
Clausen, Christian (Intern)  
McAloone, Tim C. (Intern)

**Financing sources**  
Source: Forsk. Andre statslige danske i øvrigt  
Name of research programme: Forsk. Andre statslige danske i øvrigt  
Amount: 400,000.00 Danish Kroner

**Fremstilling af tyndvægget near net shape gods i støbejern, Procesforhold, modelfremstilling og metallurgi**  
Department of Management Engineering  
Number of participants: 4
Punching and stamping of stainless steel is characterised as tribologically difficult due to galling caused by the brittle oxides and the large affinity of the base material to pick-up on the tool surface resulting in scoring of subsequently passing work piece surface. Until recently, the only lubricants able to impede galling in severe deep drawing, stretch forming and ironing operations were chlorinated paraffin oils, which are expected to be abandoned in near future due to environmental problems. In a national Danish research programme, 1994-99, two new lubricant systems have been developed as substitutes to chlorinated paraffin oils. Testing of these environmentally harmless lubricants under controlled laboratory conditions has shown very promising results and so has initial industrial tests at Danfoss, Grundfos and Volvo among others. In the present research programme "Industrial punching/blanking and sheet metal forming – lubricants, mechanisms of lubrication and environmental aspects" running from 2000-2003 the development and testing of lubrication systems will be further studied in a co-operative project between Institut for Kemi, DTU, Institut for Produktion, DTU (in the following named IPT), Danfoss, Grundfos, RM Rich. Müller, Esti Chem and Houghton Danmark. Objectives The objective of the present project is to develop a general methodology for determination of the limits of lubrication in sheet metal forming of stainless steel. Furthermore development and testing of tailor-made surface topographies improving the resistance to lubricant film breakdown will be studied.
Phd Student:
Olsson, David Dam (Intern)
Main Supervisor:
Bay, Niels Oluf (Intern)
Examiner:
Wanheim, Tarras (Intern)
Kuzman, Karl (Ekstern)
Lassen, Søren (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Access modes to public transport.
Department of Transport
Number of participants: 1
Project ID: 552-35023
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Program. Andre statslige danske - Miljø
Name of research programme: Program. Andre statslige danske - Miljø
Amount: 1,105,506.00 Danish Kroner
Project

Strategic models
Department of Transport
Number of participants: 1
Project ID: 552-35024
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Program. Andre statslige danske - Miljø
Name of research programme: Program. Andre statslige danske - Miljø
Amount: 444,960.00 Danish Kroner
Project

Value of time in traffic models
Department of Transport
Number of participants: 1
Project ID: 552-35022
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Program. Andre statslige danske - Miljø
Name of research programme: Program. Andre statslige danske - Miljø
Amount: 516,513.00 Danish Kroner
Project

Digital signatur
Department of Management Engineering
Life Cycle Assessment on the hydraulic motor OMV/OMVW-800.
The project was made under the supervision of Sauer-Danfoss (formal host of this project) and the Department of Manufacturing Engineering and Management (Institut for Produktion og Ledelse IPL) at Denmark's Technical University (DTU). The aim of the project was to perform a cradle-to-grave Life Cycle Assessment (LCA) on the Hydraulic motor type OMV/W-800 manufactured by the international company, Sauer-Danfoss. The goal of the study was to clarify the impact potentials, including resource consumptions and environmental impact potentials throughout the entire lifespan of the hydraulic motor OMV/W-800 by means of a literature survey, Sauer-Danfoss literature and data, and other information sources by adopting the LCA methodology as a tool. Furthermore the goal was to carry out a complete quantitative analysis on the product's processes and materials, and identifying and evaluating the most promising options for improving the product systems with respect to environmental quality and resource efficiency. Many of Sauer Danfoss A/S suppliers did not want to disclose data on their production due to fear of competition and confidential agreements with third party suppliers. Even with the knowledge of my confidentiality agreement with Sauer-Danfoss A/S, many of the suppliers and company employees were unwilling to cooperate with me. Thus the data collection proved to be very time consuming. Especially data on ancillary substances, proved to be hard to acquire. Therefore the main conclusions are drawn on incomplete data with regard to toxicity impacts. The goal and scope of the study is defined in detail. Data collected in the inventory part is a mixture of actual measurements, calculations, literature data and estimates. To accomplish the goal, the potential impacts on the environment and the resource consumptions of the hydraulic product system are assessed by means of a literature survey and the EDIP computer tool. Based on the results from the EDIP PC Tool, it is determined that the main impacts of the hydraulic product system are the contributions to persistent toxicity, human toxicity, eco-toxicity, global warming, acidification, photochemical ozone formation and nutrient enrichment and material related resource consumptions of nickel and molybdenum are due to the use of raw materials in the form of high quality steel. Finally, the service and efficiency of the hydraulic motor are found to be significant parameters.
Modellering af mekaniske og metallugriske egenskaber ved "Friction Stir" svejste sammenføjninger

Department of Management Engineering
Period: 01/08/2000 → 25/08/2004
Number of participants: 6
Phd Student:
Schmidt, Henrik Nikolaj Blicher (Intern)
Supervisor:
Wert, John (Ekstern)
Main Supervisor:
Hattel, Jesper Henri (Intern)
Examiner:
Bay, Niels Oluf (Intern)
Bhadeshia, Harshad K. D. H. (Ekstern)
Lindegren, Lars-Erik (Ekstern)

The learning safety organization
Action research project studying the possibilities to develop the work of the safety organization in terms of learning processes, power and politics.

Department of Management Engineering
Period: 01/08/2000 → 01/01/2002
Number of participants: 2
Project participant:
Jensen, Per Langaa (Intern)
Broberg, Ole (Intern)

Udvikling af modeller, metoder og værktøjer til forandringsledelse

Department of Management Engineering
Period: 01/08/2000 → 10/06/2005
Number of participants: 5
Phd Student:
Jensen, Jeanette Mertz (Intern)
Main Supervisor:
Jensen, Per Langaa (Intern)
Examiner:
Broberg, Ole (Intern)
Andersen, Ole Steen (Ekstern)
Pouffelt, Flemming (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD
**Integrated traffic, regional econom.**

Department of Transport  
Number of participants: 1  
Project ID: 552-35019  
Project Manager, organisational:  
Kronbak, Jacob (Intern)

**Financing sources**  
Source: Program. Andre statslige danske - Miljø  
Name of research programme: Program. Andre statslige danske - Miljø  
Amount: 836,400.00 Danish Kroner

**Digital Instron**  
Modernisation of tensile testing machine  
Department of Management Engineering  
Period: 01/06/2000 → 01/10/2002  
Number of participants: 1  
Project Manager, organisational:  
Horsewell, Andy (Intern)

**Financing sources**  
Source: Gaver, Private danske Fonde  
Name of research programme: Gaver, Private danske Fonde  
Amount: 55,300.00 Danish Kroner

**PROGRESS/AKTA**  
Department of Transport  
Period: 08/05/2000 → 31/12/2004  
Number of participants: 3  
Project ID: 481-35018  
Project participant:  
Landex, Alex (Intern)  
Würtz, Christian Juul (Intern)  
Project Manager, organisational:  
Nielsen, Otto Anker (Intern)

**Financing sources**  
Source: Forsk. EU - Rammeprogram  
Name of research programme: Forsk. EU - Rammeprogram  
Amount: 347,584.00 Danish Kroner

**INDUBRAZE, Induction brazing of complex material combinations and induction hardening**  
INDUBRAZE In the project a combined numerical and experimental methodology for fast determination of appropriate coil geometry and position in induction brazing tube-to-plate joints of different ratios between tube and plate thickness and different combinations of the materials stainless steel, brass and copper, have been developed. An appropriate coil design and an approximate positioning are determined by numerical analysis. Required heating time, power and optimum position of the coil, are subsequently found experimentally by measuring the temperature development during heating using thermocouples mounted on both sides of the joint.

Department of Management Engineering  
Danfoss A/S  
Obel-P
Period: 01/05/2000 → 01/07/2003  
Number of participants: 3  
Project participant:  
Henningsen, Poul (Intern)  
Laursen, Birthe (Ekstern)  
Project Manager, organisational:  
Bay, Niels Oluf (Intern)  

Financing sources  
Source: Forskningsrådene - STVF  
Name of research programme: Forskningsrådene - STVF  
Amount: 2,400,000.00 Danish Kroner  

Nano-hvof  
Characterisation and modelling of HVOF for chromium carbide coatings  
Department of Management Engineering  
Period: 01/05/2000 → 01/05/2003  
Number of participants: 1  
Project Manager, organisational:  
Horsewell, Andy (Intern)  

Financing sources  
Source: Forsk. EU - Rammeprogram  
Name of research programme: Forsk. EU - Rammeprogram  
Amount: 695,375.00 Danish Kroner  

Future transportation concepts  
The aim of the project is to develop new concepts for transportation in order to improve the effectiveness of the transportation of goods and to improve the competitive position of the transportation companies.  
Department of Management Engineering  
Period: 01/04/2000 → 01/12/2004  
Number of participants: 1  
Project Manager, organisational:  
Michelsen, Aage U (Intern)  

Financing sources  
Source: Forsk. Andre statslige danske i øvrigt  
Name of research programme: Forsk. Andre statslige danske i øvrigt  
Amount: 500,000.00 Danish Kroner  

Testing and modelling of material and contact properties in resistance welding  
Department of Management Engineering  
Period: 01/04/2000 → 20/01/2004  
Number of participants: 6  
Phd Student:  
Song, Quanfeng (Intern)  
Supervisor:  
Zhang, Wenqi (Intern)  
Main Supervisor:  
Bay, Niels Oluf (Intern)  
Examiner:  
Martins, Paulo Antonio Firme (Ekstern)  
Hattel, Jesper Henri (Intern)  
Laursen, Birthe (Intern)  

Financing sources
EasyTrac
The present dimensional calibration methods are highly diversified/specific and require a big number of different standards. All these standards must be calibrated in accredited laboratories which from the side of logistic effort, availability of the standards, and costs for the calibrations is a big burden for small metrology service providers. With coordinate measuring machines accuracies can be reached which satisfy almost any regular demand from industrial metrology - if the proper procedures are used. The problem is the knowledge of the procedures and the official acknowledgement of them. The intention is to significantly reduce in average the efforts and costs associated with the traceability of industrial dimensional metrology laboratories by the almost exclusive use of coordinate measuring machines (CMMs). Fully documented, ready to use procedures shall be developed. The procedures shall cover virtually the whole spectrum of calibrations required for dimensional metrology in classical mechanical production, excluding for the time being only the calibration of small gauge blocks and small standards for form (i.e. roundness, straightness, cylindricity).
Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 1,340,580.00 Danish Kroner
Project

Udvikling af virtuelle virksomheder - metoder og fremgangsmåder
Department of Management Engineering
Period: 01/03/2000 → 22/05/2006
Number of participants: 5
Phd Student:
Tølle, Martin (Intern)
Main Supervisor:
Vesterager, Johan (Intern)
Examiner:
Jensen, Per Langaa (Intern)
Møller, Charles (Ekstern)
Nemes, Laszlo (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Anden EU-finansiering
Project: PhD

Utopi og strategi i fødevaresektoren - Scenarieanalyse som erkendelses- og dialogproces i et "jord til bord" perspektiv
Department of Management Engineering
Period: 01/03/2000 → 10/06/2005
Number of participants: 5
Phd Student:
Netterstrøm, Sune (Intern)
Main Supervisor:
Rasmussen, Lauge Baungaard (Intern)
Examiner:
Danielsen, Oluf (Ekstern)
Binder, Thomas (Intern)
Elle, Morten (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Spotlights
Department of Transport
Period: 03/02/2000 → 30/06/2002
Number of participants: 1
Project ID: 481-35016
Project Manager, organisational:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 244,000.00 Danish Kroner

A structural study of block copolymers under deformation
Department of Management Engineering
Department of Chemical and Biochemical Engineering
Forskningscenter Risø
Period: 01/02/2000 → 01/01/2003
Number of participants: 4
Project participant:
Kjær, Erik Michael (Intern)
Eskimergen, Rüya (Intern)
Mortensen, Kell (Intern)
Vigild, Martin Etchells (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,077,000.00 Danish Kroner

A Structural Study of Diblock Copolymer Phase Behaviour
Department of Management Engineering
Period: 01/02/2000 → 26/02/2004
Number of participants: 7
Phd Student:
Eskimergen, Rüya (Intern)
Supervisor:
Mortensen, Kell (Intern)
Vigild, Martin Etchells (Intern)
Main Supervisor:
Kjær, Erik Michael (Intern)
Examiner:
Lyngaae-Jørgensen, Jørgen (Intern)
Ndoni, Sokol (Intern)
Richtering, Walter (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Centerfinansieret
Project: PhD

Kultur, politik og vidensledelse i distribuerede udviklingsmiljøer
Department of Management Engineering
Period: 01/02/2000 → 18/06/2007
Number of participants: 5
Phd Student:
Hansen, Per Richard (Intern)
Main Supervisor:
Clausen, Christian (Intern)
Examiner:
Koch, Christian (Intern)
Gherardi, Silvia (Ekstern)
Parker, Martin (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

### Styrkægende mekanismer i elektrokemisk udfældede belægninger

Department of Management Engineering
Period: 01/02/2000 → 24/08/2004
Number of participants: 6

Phd Student:
Rasmussen, Anette Alsted (Intern)
Supervisor:
Møller, Per (Intern)
Main Supervisor:
Somers, Marcel A. J. (Intern)
Examiner:
Petrushina, Irina (Intern)
Holmbom, Lars Göran (Ekstern)
Landolt, Dieter (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

### Udvikling af virtuelle virksomheder - viden og kompetencer

Department of Management Engineering
Period: 01/02/2000 → 28/09/2005
Number of participants: 4

Phd Student:
Pedersen, Jens Dahl (Intern)
Main Supervisor:
Jensen, Per Langaa (Intern)
Examiner:
Christoffersen, Mads (Intern)
Olus, Martin (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

### CIAMM - Center for Industrialised Application of Mathematical Modelling

CIAMM started its activity in late 1999. The goal has been to develop planning tools based on mathematical modelling, which can be used in everyday planning and replanning in larger companies. The planning problems are usually so complex, that a human planner cannot take into account all possible solutions. During the three project years the main case study has been the steel plate storage at Odense Steel Shipyard. The storage consists of 250 stacks containing more than 3000 types of steel plates. The plates are lifted by two gantry cranes sharing tracks and hence unable to pass each other. When a specific plate is needed in the production, all plates above this in the stack have to be moved to get access to the plate. Hence each plate is lifted unproductively a number of times, before it is actually removed from the storage. The problem addressed is how to organize the storage in order to minimize the number of superfluous lifts. The project has developed methods both for planning the daily sequences of lifts and for on-line dispatch strategy for operating the cranes. Saving of 50 - 60 % on the current practice has been achieved. In addition, a packing system has been developed based on a real-life case from Bang & Olufsen, in which boxed are packed into containers taking into account also constraints regarding loads on the items and support of these. Finally, a methodology for IT-system development with a large optimization content has been developed and described - the technique resembles the DSDM
method, and much attention is given to rapid prototype developments and to knowledge exchange between end users and developers, since this has turned out to be a major obstacle in the development process.

Department of Informatics and Mathematical Modeling
Department of Management Engineering
Aalborg University
Copenhagen Business School
Odense Steel Shipyard Ltd.
Bang & Olufsen A/S
Teknologisk Institut

Period: 01/01/2000 → 31/12/2002
Number of participants: 8
Project participant:
Hansen, Jesper (Intern)
Project Manager, organisational:
Clausen, Jens (Intern)
Vesterager, Johan (Intern)
Holm, Hans (Ekstern)
Mouritsen, Jan (Ekstern)
Tuxen, Jan (Ekstern)
Kamp, Per (Ekstern)
Risager, Claus (Ekstern)

EasyTrac

The present dimensional calibration methods are highly diversified/specific and require a big number of different standards. All these standards must be calibrated in accredited laboratories which from the side of logistic effort, availability of the standards, and costs for the calibrations is a big burden for small metrology service providers. With coordinate measuring machines accuracies can be reached which satisfy almost any regular demand from industrial metrology - if the proper procedures are used. The problem is the knowledge of the procedures and the official acknowledgement of them. The intention is to significantly reduce in average the efforts and costs associated with the traceability of industrial dimensional metrology laboratories by the almost exclusive use of coordinate measuring machines (CMMs). Fully documented, ready to use procedures shall be developed. The procedures shall cover virtually the whole spectrum of calibrations required for dimensional metrology in classical mechanical production, excluding for the time being only the calibration of small gauge blocks and small standards for form (i.e. roundness, straightness, cylindricity).

Department of Management Engineering
University of Padua

Period: 01/01/2000 → 31/12/2003
Number of participants: 6
Project participant:
Larsen, Erik (Intern)
Sobiecki, Rene (Intern)
Savio, Enrico (Intern)
Carmignato, Simone (Ekstern)
Tosello, Guido (Ekstern)

Project Manager, organisational:
De Chiffre, Leonardo (Intern)

GLOBEMEN

Why? - The project is initialised in order to define and harmonise ICT support requirements in various one-of-a-kind industries operating in various cultural environments. By combining the views and requirements of various industries GLOBEMEN aims to guide and encourage the industry and IT vendors to develop and adopt improved IT infrastructures. The project aims to demonstrate functionalities which offer attractive market opportunities to IT vendors for product development to satisfy the needs of various industries world-wide. What? - The objectives are: to define a reference architecture for virtual manufacturing enterprises, to implement proof of concept industrial prototypes, to demonstrate core features of the architecture, and to promote deployment by IT vendors, manufacturing industry, academia and
standardisation. How? The approach of GLOBEMEN is to address three main aspects of manufacturing: sales and services, inter-enterprise management and engineering. Based on industrial requirements specifications the work will be co-ordinated and integrated into an IT architecture for enterprise networks and virtual enterprises. This will include a reference model and associated methodology or guidelines, based on which IT support for such virtual enterprise networks can be set up and operated. For whom? - The models and architecture will be generic enough so as to be usable in all one-of-a-kind industries, directly usable by standards bodies and by IT vendors. The results will be validated through industrial prototypes, and implemented in selected applications. The results will be consolidated and disseminated to the industry, standardisation bodies and IT vendors. Time & cost? - The duration of GLOBEMEN is 3 years (Jan 2000 - Mar 2003). The estimated effort is 1000 person-months.

Department of Management Engineering

VTT - Technical Research Centre of Finland
Baan Corporation
YIT Corporation Ltd.
Fortum Engineering Ltd.
Intracom Consult aps
EPM Technology Group
Bühler AG
Eidgenössische Technische Hochschule
Griffith University
Toyo Engineering Corporation

Period: 01/01/2000 → 01/03/2003
Number of participants: 11
Project participant:
Tølle, Martin (Intern)
Terttu Luukkonen (Ekstern)
Roel van der Berg (Ekstern)
Olli Nummelin (Ekstern)
Jari Puttonen (Ekstern)
Maria Anastasiou (Ekstern)
Jorulv Rangnes (Ekstern)
Beat Haeni (Ekstern)
Paul Schönlieben (Ekstern)
Peter Bernus (Ekstern)

Project Manager, organisational:
Vesterager, Johan (Intern)

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 2,100,000.00 Danish Kroner
High Temperature Corrosion in Power Plants - 2
The aim of the project is to consolidate the expertise in the high temperature corrosion area which is relevant to power plant operation. Investigation of alloys exposed in situ using microscopical techniques gives a measure of corrosion rates and a deeper understanding of the corrosion mechanisms in play.

Department of Manufacturing Engineering
Department of Management Engineering
EK Power Company
ELSAM Power Company
Period: 01/01/2000 → 31/12/2002
Number of participants: 5
Project participant:
Somers, Marcel A. J. (Intern)
Maahn, Ernst Emanuel (Intern)
Karlsson, Asger (Ekstern)
Larsen, Ole Hede (Ekstern)
Project Manager, organisational:
Montgomery, Melanie (Intern)

Financing sources
Source: Unknown
Name of research programme: Ukendt
Amount: 1,875,630.00 Danish Kroner

Low temperature surface hardening of austenitic stainless steel
The research plan is subdivided in: a. assessment of the thermodynamics of the S-phase b. assessment of the growth and decomposition kinetics of the S-phase c. determination of lattice strains in S-phase layers d. investigation of the relation between hardness, composition and residual stresses e. investigation of wear performance f. investigation of electrochemical properties.

Department of Management Engineering
Period: 01/01/2000 → 01/01/9999
Number of participants: 2
Project participant:
Christiansen, T. (Ekstern)
Project Manager, organisational:
Somers, Marcel A. J. (Intern)

Multi-perspective Approach for the Implementation og Mathematical Models in Production Planning and control

Department of Management Engineering
Period: 01/01/2000 → 26/02/2004
Number of participants: 6
Phd Student:
Carugati, Andrea (Intern)
Supervisor:
Jensen, Per Langaa (Intern)
Main Supervisor:
Vesterager, Johan (Intern)
Examiner:
Havn, Erling C. (Intern)
Gibson, Cyrus F. (Ekstern)
Møller, Charles (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Offentlig finansiering
OPTIMISE - Optimising Powder-In-Tube Tapes In MRI Systems as Ice-Breaker for HTS Socio-Economic Benefits

Department of Management Engineering
Institute for Product Development
Period: 01/01/2000 → 01/12/2002
Number of participants: 6
Project participant:
Eriksen, Morten (Intern)
Nielsen, Morten Storgård (Intern)
Sobiecki, Rene (Intern)
Bech, Jakob Isted (Intern)
Project Manager, organisational:
Arentoft, Mogens (Intern)
Bay, Niels Oluf (Intern)

Financing sources
Source: Gaver, Private danske Andre private
Name of research programme: Gaver, Private danske Andre private
Amount: 100,000.00 Danish Kroner

TPM in Danish industry
The aim of the project is to develop methods and procedures for implementing Total Productive Maintenance in SME Danish companies. During the project the first steps of TPM will be implemented in 4 companies.

Department of Management Engineering
Aalborg University
Teknologisk Institut
Period: 01/01/2000 → 01/12/2003
Number of participants: 4
Project participant:
Christiansen, Thomas Bøhm (Intern)
Franksen, Gert (Ekstern)
Nørby, Merete (Ekstern)
Project Manager, organisational:
Michelsen, Aage U (Intern)

Financing sources
Source: Forskningsprojekter - Erhvervsministeriet
Name of research programme: Forskningsprojekter - Erhvervsministeriet
Amount: 260,000.00 Danish Kroner

Trafikmodeller for passagertrafik med bane
Department of Transport
Period: 01/01/2000 → 29/09/2003
Number of participants: 4
Phd Student:
Sørensen, Majken Vildrik (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)
Examiner:
Brundell-Freij, Karin (Ekstern)
Larsen, Odd I. (Ekstern)
**Financing sources**
Source: Internal funding (public)
Name of research programme: Samarbejdsaftalefinans
Project: PhD

**Trendchart Lot 1 on innovation**
The project will register Danish national policy programmes in technology and innovation. The framework is a common frame for all participating countries which are EU member countries and some other countries e.g. Norway, Iceland and Israel. There are some more analytical work done on basis of these national informations.

Department of Management Engineering
Center for Teleinformation
University of Manchester
Period: 01/01/2000 → 01/07/2003
Number of participants: 4
Project participant:
Jensen, Søren Christrup (Intern)
Jensen, Søren Christrup (Ekstern)
Cunningham, Paul (Ekstern)
Project Manager, organisational:
Pedersen, Jørgen Lindgaard (Intern)

**Financing sources**
Source: Forsk. EU - Andre EU-midler
Name of research programme: Forsk. EU - Andre EU-midler
Amount: 200,000.00 Danish Kroner

**Trendchart Lot 1 on innovation**
The project will register Danish national policy programmes in technology and innovation. The framework is a common frame for all participating countries which are EU member countries and some other countries e.g. Norway, Iceland and Israel. There are some more analytical work done on basis of these national informations.

Department of Technology and Social Sciences
Department of Management Engineering
Period: 01/01/2000 → 31/12/2003
Number of participants: 2
Project participant:
Christrup Jensen, S. (Ekstern)
Project Manager, organisational:
Pedersen, Jørgen Lindgaard (Intern)

**Ultrasound actuator for aerospace applications**
Aiming primarily at aerospace applications, principles of designing a spherical ultrasound motor are being investigated. The motivation for ultrasound motors in aerospace applications is the possibility to make a non-magnetic, lightweight and high precision torque device for control applications. The research project aims in particular at investigating the contact modelling effects, which play a major role for developed torque and efficiency of the motor.

Department of Automation
Department of Management Engineering
Aalborg University
Period: 01/01/2000 → 01/01/9999
Number of participants: 3
Project participant:
Helbo, J. (Ekstern)
Andersen, B. (Ekstern)
Project Manager, organisational:
Blanke, Mogens (Intern)
CEVI method development
The project aimed at developing operational methods for savings and reuse of water and waterborne energy and chemicals in industrial wet processing. Methods include simple pinch analyses for targeting water savings and -reuse as well as methods for system design of water reuse systems. Moreover procedures for identifying options for process optimisation were developed including savings of water, energy, and chemicals. Finally, the feasibility of separation technologies such as membranefiltration and evaporation was revealed through laboratory and pilot scale test procedures. Solutions of large savings and short economic pay-back periods were chosen and successfully implemented in full scale.

Department of Management Engineering
Department of Chemical and Biochemical Engineering
Institute for Product Development
DHI Denmark
Teknologisk Institut
Mejeri- og Levnedmiddelinsti
Berendsen Textil Service A/S
Brdr. Hartmann A/S
Danexport A/S
Launis A/S
Trevira Neckelmann A/S
Period: 01/12/1999 → 01/12/2003
Number of participants: 11
Project participant:
Kristensen, Gert Holm (Ekstern)
Nørby, Merete (Ekstern)
Jonsson, Gunnar Eigil (Intern)
Knudsen, Hans Henrik (Intern)
Knøchel, Susanne (Ekstern)
Grüttner, Henrik (Ekstern)
Pedersen, Claus Stig (Ekstern)
Sandbæk, Benedicte (Ekstern)
Nielsen, Jørn (Ekstern)
Nelleborg, Palle (Ekstern)
Project Manager, organisational:
Wenzel, Henrik (Intern)

Financing sources
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt
Amount: 1,500,000.00 Danish Kroner

CS - Calibration Standard
CS - Calibration Standard

Department of Management Engineering
Period: 01/12/1999 → 01/12/1999
Number of participants: 1
Project Manager, organisational:
De Chiffre, Leonardo (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Project
**FATLIFE**

Department of Management Engineering  
Period: 01/12/1999 → 01/12/1999  
Number of participants: 1  
Project Manager, organisational:  
Arentoft, Mogens (Intern)

**Financing sources**  
Source: Udenfor rammen  
Name of research programme: Ukendt  
Project

**PRECI54M**

Department of Management Engineering  
Period: 01/12/1999 → 01/12/1999  
Number of participants: 1  
Project Manager, organisational:  
Arentoft, Mogens (Intern)

**Financing sources**  
Source: Udenfor rammen  
Name of research programme: Ukendt  
Project

Production of thin-walled near net shape iron castings, pattern construction, process conditions and metallurgy  
Industrial Ph.D. in collaboration with Disa Industries A/S  
Improved methods of producing extremely thin-walled ductile iron castings.

Department of Management Engineering  
Period: 01/12/1999 → 01/11/2003  
Number of participants: 2  
Project participant:  
Larsen, Per Leif (Intern)  
Project Manager, organisational:  
Tiedje, Niels Skat (Intern)

**Financing sources**  
Source: Forskningsprojekter - Erhvervsforskere, VTU  
Name of research programme: Forskningsprojekter - Erhvervsforskere, VTU  
Amount: 1,400,000.00 Danish Kroner  
Project

**ROLLSURF**

Department of Management Engineering  
Period: 01/12/1999 → 01/12/2004  
Number of participants: 2  
Project participant:  
Henningsen, Poul (Intern)  
Project Manager, organisational:  
Arentoft, Mogens (Intern)

**Financing sources**  
Source: Gaver, Private danske Andre private  
Name of research programme: Gaver, Private danske Andre private  
Amount: 650,000.00 Danish Kroner  
Project
Strategies for the environmental competence development
The research focuses on developing concepts for analyses of environmental competence in companies, product chains and sectors. Furthermore the aim is to develop strategies for the development of environmental competence on these arenas based on studies of environmental practice.

Department of Management Engineering
Period: 01/12/1999 → 01/12/1999
Number of participants: 1
Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)

Financing sources
Source: [Ordinær drift UK 10]
Name of research programme: Ukendt
Project

TALENT - Modelling and Optimizing Resistance Welding of Complex Geometries and Materials Combinations
The main objective of the project is to develop a computer aided method for development and optimization of resistance welding processes by using advanced finite element modelling techniques based on numerical modelling and experimental investigations. The project is subdivided into three project areas: a. Numerical modelling and optimization of resistance welding processes, b. Material properties including contact conditions and strategic surface coatings in resistance welding, c. Machine tests and industrial verification of the numerical models.

Department of Management Engineering
Period: 01/12/1999 → 01/12/1999
Number of participants: 2
Project participant:
Song, Quanfeng (Intern)
Project Manager, organisational:
Zhang, Wenqi (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Project

The impact of science shops on curricula and research
The impact of science shops on university curricula and research has been analysed through a questionnaire and case studies among some university based European and American science shops. The project was part of a project carried out by an international network of science shops doing research on different models for science shops, societal and organisational factors that have an impact on the success and failure of science shops, training needs in science shops, the impact on curricula and research and the possibilities for strengthening the international networking through a more formalised network, an international database and an international journal.

Department of Management Engineering
Centre for Engineering Educational Development
Biology Science Shop University
Chemistry Science Shop Univers
Gheorghe Asachi Technical University of Iasi
Period: 01/12/1999 → 01/12/2001
Number of participants: 5
Project participant:
Hende, Merete (Intern)
Caspar de Bok (Ekstern)
Mulder, Henk (Ekstern)
Teodosiu, Carmen (Ekstern)
Project Manager, organisational:
Jørgensen, Michael Søgaard (Intern)
Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 100,000.00 Danish Kroner
Project

Upgrade of EDS-equipment
Department of Management Engineering
Period: 01/12/1999 → 01/09/2004
Number of participants: 1
Project Manager, organisational:
Horsewell, Andy (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Amount: 76,000.00 Danish Kroner
Project

Wear and corrosion of pharmaceutical dosing pumps
Department of Manufacturing Engineering
Department of Management Engineering
Period: 01/12/1999 → 31/07/2000
Number of participants: 1
Project Manager, organisational:
Christoffersen, Lasse Wengel (Intern)

Financing sources
Source: Unknown
Name of research programme: Ukendt
Amount: 100,000.00 Danish Kroner
Project

Udnyttelse af procesvandkoncentrater og andre restfraktioner
Department of Management Engineering
Period: 15/11/1999 → 19/10/2004
Number of participants: 6
Phd Student:
Villanueva, Alejandro (Intern)
Supervisor:
Nielsen, Per Henning (Intern)
Main Supervisor:
Wenzel, Henrik (Intern)
Examiner:
Andreasen, Peter (Ekstern)
Christensen, Thomas Højlund (Intern)
Jepsen, Svend Erik (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Centerfinansieret
Project: PhD

Indflydelsen af mikrostrukturen på udmattelsesegenskaberne af højtlyse materialer, som anvendes i forspændte presseværktøjer
Department of Management Engineering
Influence of microstructure on low cycle fatigue properties of high strength steel
Investigation of the relation between microstructural features and the fatigue performance of PM high speed steel.

Department of Manufacturing Engineering
Department of Management Engineering

Forskningscenter Risø
Period: 01/10/1999 → 01/02/2003
Number of participants: 4
Project participant:
Somers, Marcel A. J. (Intern)
Højerslev, Christian (Intern)
Carstensen, Jesper Vejlø (Intern)
Project Manager, organisational:
Brøndsted, Povl (Intern)

Financing sources
Source: Sektorforskningen - RISØ
Name of research programme: Sektorforskningen - RISØ
Amount: 240,000.00 Danish Kroner
Project

Risikomodeller for jernbanetrafik
Department of Transport
Period: 01/10/1999 → 26/03/2001
Number of participants: 4
Phd Student:
Grevy, Bo (Intern)
Supervisor:
Petersen, Kurt (Intern)
Thyregod, Poul (Intern)
Main Supervisor:
Nielsen, Otto Anker (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Blandet Finansiering
Project: PhD
Development and characterisation of electroformed tools for micro injection moulding

Department of Management Engineering
Period: 01/09/1999 → 01/08/2001
Number of participants: 1
Project Manager, organisational:
Tang, Peter Torben (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 999,600.00 Danish Kroner

Microstructure and creep properties of power plant steels
Department of Management Engineering
Period: 01/09/1999 → 27/09/2002
Number of participants: 6
Phd Student:
Korcakova, Leona (Intern)
Supervisor:
Hald, John (Intern)
Main Supervisor:
Somers, Marcel A. J. (Intern)
Examiner:
Horsewell, Andy (Intern)
Blum, Hans Jakob R. (Ekstern)
Ågren, John (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Samarbejdsaftalefinans
Project: PhD

Multilayered coatings by electrodeposition
Multilayered coatings produced by the dual bath electrodeposition technique are interesting microstructurally and with respect to mechaenical properties including hardness and wear resistance. CuNi coatings are being investigated.

Department of Manufacturing Engineering
Department of Micro- and Nanotechnology
Department of Management Engineering
Period: 01/09/1999 → 01/01/9999
Number of participants: 2
Project participant:
Tang, Peter Torben (Intern)
Project Manager, organisational:
Horsewell, Andy (Intern)

Præcisionsjordbrug - en vurdering af teknologi, økonomi og miljø
Department of Management Engineering
Period: 01/09/1999 → 25/09/2003
Number of participants: 6
Phd Student:
Pedersen, Søren Marcus (Intern)
Supervisor:
Gylling, Morten (Ekstern)
Precision farming
This project analyses the impact of precision farming (PF) practices in Denmark by using technology assessment methods. The project involves an integrated application of participatory impact analysis and cost-benefit analysis of various PF-practices in cereals. Precision farming implies that the use of nutrients, lime and pesticides are used site-specifically according to the site-specific needs on the field by using the GPS-system for positioning on the field. The decision support systems for conducting site-specific application is based on soil maps, yield maps, information about nitrogen-status (with remote sensing) and weed maps (weed detection).

Department of Management Engineering
Period: 01/09/1999 → 01/05/2003
Number of participants: 2
Project participant:
Pedersen, Søren Marcus (Intern)
Pedersen, Jørgen Lindgaard (Intern)

Financing sources
Source: Forskningsprojekter - Fødevareministeriet
Name of research programme: Forskningsprojekter - Fødevareministeriet
Amount: 1,000,000.00 Danish Kroner
Project
Integration af produktionsudstyr i agile produktionsystemer

Department of Management Engineering
Period: 01/06/1999 → 17/05/2004
Number of participants: 3
Phd Student: Schnell, Jakob (Intern)
Supervisor: Langer, Gilad (Intern)
Main Supervisor: Alting, Leo (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut/centerfinansieret
Project: PhD

Development of an integrated numerical model for spray forming

Numerical modelling of spray forming with an integrated model

Department of Management Engineering
Period: 01/05/1999 → 01/02/2003
Number of participants: 2
Project participant: Hattel, Jesper Henri (Intern)
Pedersen, Trine Bjerre (Intern)

Financing sources
Source: Forskningsrådene - STVF
Name of research programme: Forskningsrådene - STVF
Amount: 1,400,000.00 Danish Kroner
Project

Modelling of residual stresses in spray formed structures

Department of Management Engineering
Period: 01/05/1999 → 04/04/2003
Phd Student: Pedersen, Trine Bjerre (Intern)
Supervisor: Pryds, Nini (Intern)
Main Supervisor:
Hattel, Jesper Henri (Intern)
Examiner:
Hansen, Preben Nordgaard (Ekstern)
Doherty, Roger D. (Ekstern)
Fritsching, Udo W. (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Risø (Løn)
Project: PhD
Numerical Modelling of Residual Stresses in Spray Forming

The aim of the project is to describe residual stresses in spray forming with respect to predicting the formation of cracks and the distortion of the preform. The mathematical description of the temperatures in the deposit will be developed on the basis of a 2-D cylindrical $(r,z)$ finite volume model. The interface between the atomization and the deposition models will be based on a new approach of local droplet distributions at the surface of the preform combined with models for sticking efficiency. Based on the calculated temperature and geometry of the spray formed material a 2-D cylindrical $(r,z)$ finite volume model for the stresses and the deformations will be developed as well.

Department of Manufacturing Engineering

Department of Management Engineering
Period: 01/05/1999 → 30/04/2002
Number of participants: 2
Project participant:
Pedersen, Trine Bjerre (Intern)
Project Manager, organisational:
Hattel, Jesper Henri (Intern)

Financing sources
Source: Unknown
Name of research programme: Ukendt
Amount: 1,000,000.00 Danish Kroner

The concept of care in product and process development in organic food production

The goal is to identify major parameters in the concept of care, taking inspiration from the principles of organic production as one possible guideline. Care is defined in the broad term, related to both product, environment and the people that are involved.

Department of Technology and Social Sciences

Department of Management Engineering
Period: 01/05/1999 → 01/05/2002
Number of participants: 6
Project participant:
Jørgensen, Michael Søgaard (Intern)
Nielsen, Thorkild (Intern)
Rasmussen, Lauge Baungaard (Intern)
Adler-Nissen, Jens (Ekstern)
Grunert, Klaus (Ekstern)
Project Manager, organisational:
Kristensen, Niels Heine (Intern)

Financing sources
Source: Unknown
Name of research programme: Ukendt
Amount: 1,400,000.00 Danish Kroner

Deltagelsesprocesser og anvendelsen af informationsteknologi i byudvikling

Department of Management Engineering
Period: 01/04/1999 → 01/03/2001
Number of participants: 3
Phd Student:
Petterson, Finn Ellehave (Intern)
Supervisor:
Foldager, Peter (Intern)
Main Supervisor:
Rasmussen, Lauge Baungaard (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-Su Stipendium, Eksperiment
Experimental investigation in turning as a basis for modeling chip formation, tool life and cutting fluid performance.
Results from the project will be valuable on two levels: they will provide accurate experimental data to be fed into the modeling of the process; they will build the documentation for attaining those data in following well defined procedures, thus preparing the bases for future development of accredited testing in metal cutting. In addition, new formulations of environmentally friendly cutting oils will be tested against commercial reference products obtained from mineral oil basestock.

Department of Management Engineering
Period: 01/04/1999 → 01/03/2000
Number of participants: 2
Project participant:
Axinte, Dragos A. (Ekstern)
Project Manager, organisational:
De Chiffre, Leonardo (Intern)

Financing sources
Source: Udenfor rammen
Name of research programme: Ukendt
Project

Planlægning for samkørsel af behovstyret persontransport ved hjælp af Dial-a-ride metoder

Department of Transport
Period: 01/03/1999 → 13/10/2003
Number of participants: 5
Phd Student:
Jørgensen, Rene Munk (Intern)
Main Supervisor:
Madsen, Oli B.G. (Intern)
Examiner:
Nielsen, Otto Anker (Intern)
Hasle, Geir (Ekstern)
Tind, Jørgen (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Sustainable Renewal of Owner-occupied Single Houses
The aim of this project is to create the basis for dissemination of facts regarding sustainable renewal to the central actors in renewal of owner occupied single houses. Three themes has been chosen to test the possible strategy: Kitchen, Windows and Water. An in-depth analysis of the primary target group - the house owners - has been carried out.

Department of Planning
Department of Environmental Engineering
Department of Management Engineering
Ladings Tegnestue
The Danish Centre for Urban Ecology
Grøn Information
Period: 01/03/1999 → 31/07/2000
Number of participants: 3
Project participant:
Hoffmann, Birgitte (Intern)
Jessen, Astrid (Intern)
Project Manager, organisational:
Elle, Morten (Intern)
A study of engineering competence and knowledge-use along shifting professional boundaries and contexts of practice in medicine

Department of Management Engineering
Period: 01/02/1999 → 28/09/2005
Number of participants: 5
Phd Student:
Yoshinaka, Yutaka (Intern)
Main Supervisor:
Jørgensen, Ulrik (Intern)
Examiner:
Broberg, Ole (Intern)
Bijker, Wiebe E. (Ekstern)
Markussen, Randi (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

FEM modelling of metal forming processes
Dr. Paulo Martins, Univ. of Lisbon, visiting professor, ph.d. course on FEM modelling of metal forming processes. Supervisor in connection with Ph.D.-projects and post.doc. projects at IPT/DTU.

Department of Manufacturing Engineering
Department of Management Engineering
University of Lisbon
Period: 01/02/1999 → 31/03/1999
Number of participants: 6
Project participant:
Arentoft, Mogens (Intern)
Zhang, Wenqi (Intern)
Eriksen, Morten (Intern)
Henningsen, Poul (Intern)
Martins, Paulo (Ekstern)
Project Manager, organisational:
Bay, Niels Oluf (Intern)

Financing sources
Source: Unknown
Name of research programme: Ukendt
Amount: 164,500.00 Danish Kroner
Project

Mekanismer for overfladedannelse ved sprøjtestøbning

Department of Management Engineering
Period: 01/02/1999 → 01/11/2004
Number of participants: 5
Phd Student:
Theilade, Uffe Rolf (Intern)
Supervisor:
Kjær, Erik Michael (Intern)
Main Supervisor:
Powercut
The present project entails research with the goal to extend laser cutting of steel based metals to thickness above 20 mm and laser powers in the 6-12 kW range, with adequate accuracy and economically viable cutting speeds. It is an objective to establish an overall understanding of the combination of gas flow, laser radiation and material flow in the laser cutting process, and on the basis of the results from these studies to make the relevant decisions concerning the design of a mirror system, cutting head and nozzles. Through the theoretical description of the mechanisms of cut front forming with its many aspects the outcome should give input to dimensioning of mirror optics and cutting nozzles.

Department of Management Engineering

Odense Stål Skibsværft
Distributional impacts of energy and environmental taxation
This project is an empirical analysis of the economic consequences of energy and environmental taxation for various population groups in Denmark. Micro data for household expenditure and types of energy are combined with information on income, size of household, occupational status, age etc. to analyse the burden that environmental taxes pose to different income groups etc. The general conclusion is that energy taxes are regressive with the exception of taxes on petrol.
Supervisor: Langer, Gilad (Intern)
Main Supervisor: Alting, Leo (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Elektrolytisk zink: Proces, mikrostruktur og korrosion
Department of Management Engineering
Period: 01/01/1999 → 09/07/2002
Number of participants: 5
Phd Student:
Fontenay, Frank Le Sage De (Intern)
Main Supervisor:
Møller, Per (Intern)
Examiner:
Paatsch, Wolfgang (Ekstern)
Jacobsen, Torben (Ekstern)
Leisner, Peter (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Anden sektorministeriel finans
Project: PhD

EMAS III - Scenario Workshop in Copenhagen
The project was to develop the basic material for and carry out a scenario workshop in Copenhagen, creating the basis for development of a Sustainable Copenhagen

Department of Planning
Department of Management Engineering
Copenhagen Municipality
Period: 01/01/1999 → 01/11/1999
Number of participants: 2
Project participant:
Teisen, Mads (Ekstern)
Project Manager, organisational:
Eile, Morten (Intern)

Financing sources
Source: Unknown
Name of research programme: Ukendt
Amount: 12,000.00 Danish Kroner
Project

Models and methods for hot spot safety work
ph.d. project financed by the Danish Academy of Technical Sciences (ATV) and Carl Bro A/S. The purpose of the project is to develop statistical methods for targeting intersections and road sections in the road network with an unusual high number of accidents.

Department of Informatics and Mathematical Modeling
Department of Transport
Department of Planning
Carl Bro A/S
PRECEPT: Process Reengineering in Europe: Choice, People and Technology

The overall objective of this project is to investigate the choices surrounding the Business Process Re-Engineering (BPR) concepts and their appropriateness in different national, industrial etc. contexts and to explore the different opportunities for developing socially feasible and acceptable BPR-oriented concepts, in order to contribute to the development of a European model for long term sustainable economic development. The project directly addresses new models of work organisation and the use of IT, and their implications for organisational performance and competitiveness - through its substantive focus on the choices of methods and concepts for business process redesign. It further addresses the means by which ideas about good practice for the business use of technologies and techniques are generated and disseminated. The project will examine the different approaches to BPR that have been espoused, and how they have been taken up differently by various exponents in different national, regional and sector contexts.

Department of Management Engineering

Financing sources
Source: Forsk. EU - Rammeprogram
Name of research programme: Forsk. EU - Rammeprogram
Amount: 1,258,000.00 Danish Kroner

Process Reengineering in Europe: Choice, People and Technology (PRECEPT)

The overall objective of this project is to investigate the choices surrounding the Business Process Re-Engineering (BPR) concepts and their appropriateness in different national, industrial etc. contexts and to explore the opportunities for developing socially feasible and acceptable BPR-oriented concepts, in order to contribute to the development of a European model for long term sustainable economic development. The project directly addresses new models of work organisation and the use of IT, and their implications for organisational performance and competitiveness - through its substantive focus on the choices of methods and concepts for business process redesign. It further addresses the means by which ideas about good practice for the business use of technologies and techniques are generated and disseminated. The project will examine the different approaches to BPR that have been espoused, and how they have been taken up differently by various exponents in different national, regional and sector contexts.

Department of Technology and Social Sciences
**Financing sources**
Source: Unknown
Name of research programme: Ukendt
Amount: 1,250,000.00 Danish Kroner

**Udvikling af specifikationssystemer**
Department of Management Engineering
Period: 01/01/1999 → 12/02/2004
Number of participants: 5
Phd Student:
Hansen, Benjamin Loer (Intern)
Main Supervisor:
Hvam, Lars (Intern)
Examiner:
Barfod, Ari (Intern)
Hvolby, Hans-Henrik (Ekstern)
Mikkelsen, Hans (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

**Validering og industriel anvendelse af metrologisk atomic force microscope**
Department of Management Engineering
Period: 01/01/1999 → 21/03/2002
Number of participants: 7
Phd Student:
Kofod, Niels (Intern)
Supervisor:
Garnæs, Jørgen (Ekstern)
Hansen, Hans Nørgaard (Intern)
Main Supervisor:
De Chiffre, Leonardo (Intern)
Examiner:
Sørensen, Mads Peter (Intern)
Glibbery, Stephen James (Ekstern)
Kunzmann, Horst (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Erhvervsforskerordningen
Project: PhD

**Activities:**

**Danish Road Safety Commission/Færdselssikkerhedskommissionen (Event)**
Period: 2018 → …
Mette Møller (Member)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

**Description**
Danish Road Safety Commission/Færdselssikkerhedskommissionen
Related event

**Danish Road Safety Commission/Færdselssikkerhedskommissionen**

15/01/2018 → 14/01/2022

Activity: Membership › Board duties in companies, associations, or public organisations

**Facilities (Journal)**

Period: 2018 → …

Giulia Nardelli (Reviewer)

Department of Management Engineering

Management Science

Implementation and Performance Management

Degree of recognition: International

**Related journal**

**Facilities**
0263-2772


Central database

Activity: Research › Peer review of manuscripts

**19th European Conference on Knowledge Management**

Period: 7 Sep 2018

Christine Ipsen (Participant)

Department of Management Engineering

Management Science

Implementation and Performance Management

Degree of recognition: International

**Related event**

**19th European Conference on Knowledge Management**

06/09/2018 → 07/09/2018

Padua, Italy

Activity: Attending an event › Participating in or organising a conference

**From Co-located to Dispersed Work – First Experiences of Commuter Hubs as Stress Intervention**

Period: 5 Sep 2018 → 7 Sep 2018

Christine Ipsen (Speaker)

Department of Management Engineering

Management Science

Implementation and Performance Management

Degree of recognition: International

**Related event**

**The 13th European Academy of Occupational Health Psychology Conference: Adapting to rapid changes in today's workplace**

05/09/2018 → 07/09/2018

Lissabon, Portugal

Activity: Talks and presentations › Conference presentations
The 13th European Academy of Occupational Health Psychology Conference
Period: 5 Sep 2018 → 7 Sep 2018
Christine Ipsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event
The 13th European Academy of Occupational Health Psychology Conference: Adapting to rapid changes in today’s workplace
05/09/2018 → 07/09/2018
Lissabon, Portugal
Activity: Attending an event › Participating in or organising a conference

20th Congress International Ergonomics Association
Period: 26 Aug 2018 → 30 Aug 2018
Christine Ipsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event
20th Congress International Ergonomics Association: Creativity in Practice
26/08/2018 → 30/08/2018
Florence, Italy
Activity: Attending an event › Participating in or organising a conference

6th AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2018) (Event)
Period: 5 Jul 2018 → 8 Jul 2018
Filipe Rodrigues (Member)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
Program committee member
Degree of recognition: International

Related event
6th AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2018)
05/07/2018 → 08/07/2018
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Do we know more about climate change than during PRUDENCE?
Period: 15 Jun 2018
Morten Andreas Dahl Larsen (Speaker)
Ole Bøssing Christensen (Guest lecturer)
Martin Drews (Guest lecturer)
Martin Stendel (Guest lecturer)
Jens Hesselbjerg Christensen (Guest lecturer)
Department of Management Engineering
Systems Analysis

**Description**
Solicited talk
Degree of recognition: International

**Related event**

2nd Baltic Earth Conference: The Baltic sea in transition
11/06/2018 → 15/06/2018
Helsingør, Denmark
Activity: Talks and presentations › Conference presentations

**Integrated coastal hazard risk reduction and management – a closer look at the dynamical damage cost methodology used in the COHERENT project**
Period: 13 Jun 2018
Kirsten Halsnæs (Guest lecturer)
Morten Andreas Dahl Larsen (Guest lecturer)
Department of Management Engineering
Systems Analysis
Degree of recognition: International

**Related event**

2nd Baltic Earth Conference: The Baltic sea in transition
11/06/2018 → 15/06/2018
Helsingør, Denmark
Activity: Talks and presentations › Conference presentations

**Sustainable shipping**
Period: 31 May 2018
Harilaos N. Psaraftis (Other)
Department of Management Engineering
Management Science
Transport DTU
Operations Management
Degree of recognition: International

**Related event**

**Sustainable shipping**
31/05/2018 → 31/05/2018
Lyngby, Denmark
Activity: Other

**ROUTE 2018**
Period: 27 May 2018
Harilaos N. Psaraftis (Other)
Department of Management Engineering
Management Science
Transport DTU
Operations Management
Description
ROUTE 2018 aims to provide a forum for scientific exchange and cooperation in the fields of vehicle routing, intermodal transportation and related areas.
Degree of recognition: International

Related event
ROUTE 2018: International Workshop on Vehicle Routing, Intermodal Transportation and Related Areas
27/05/2018 → 30/05/2018
Snekkersten, Denmark
Activity: Other

Latency and Criticality of Uncertainties in the Development of Product-Service Systems
Period: 14 May 2018 → 16 May 2018
Tabea Ramirez Hernandez (Guest lecturer)
Department of Management Engineering
Engineering Systems
Documents:
SSC Poster_Criticality and Latency of Uncertainty in PSS Development

Related event
The Spring Servitization Conference
14/05/2018 → 16/05/2018
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Maritime Logistics and Cybersecurity at DTU
Period: 2 May 2018
Harilaos N. Psaraftis (Other)
Department of Management Engineering
Management Science
Transport DTU
Operations Management

Description
Workshop presenting topics on the subjects of maritime logistics and cybersecurity. DTU and external speakers.
Degree of recognition: Local

Related event
Maritime Logistics and Cybersecurity at DTU
02/05/2018 → 02/05/2018
Copenhagen, Denmark
Activity: Other

Strategy Work Research: Reflections
Period: 1 May 2018
Josef Oehmen (Panel member)
Department of Management Engineering
Engineering Systems

Description
Panel discussion
Degree of recognition: International

Related event
One size does not fit all - Agile Strategy Implementation Framework
Period: 30 Apr 2018
Josef Oehmen (Invited speaker)
Department of Management Engineering
Engineering Systems

Description
Talk on our newly developed agile strategy implementation framework that reconciles degrees of uncertainty with amount of people-related work in strategy tasks.

Related event
MIT System Design & Management Symposium 2018: Characterizing the gap between strategy & implementation
30/04/2018 → 01/05/2018
Cambridge, MA, United States
Activity: Talks and presentations › Conference presentations

Engineering Project Risk Management
Period: 26 Apr 2018
Josef Oehmen (Invited speaker)
Department of Management Engineering
Engineering Systems

Description
Invited talk at the MIT Strategic Engineering group on paradigm-shifting research in the field of engineering project risk management.
Degree of recognition: International

Related external organisation
Massachusetts Institute of Technology
Cambridge, United States
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Danish case combining resilience, renewables, and district energy
Period: 25 Apr 2018
Daniel Møller Sneum (Guest lecturer)
Department of Management Engineering
Systems Analysis

Description
Invited as one of three presenters on the subject of real-life experiences with energy, disaster, and resilience
Degree of recognition: International

Documents:
Integrating variable renewables in extreme weather

Links:
https://irving.dartmouth.edu/events/energy-disaster-and-resilience-workshop (Energy, Disaster, and Resilience Workshop)

Related event
Energy, Disaster, and Resilience Workshop: How do we create a resilient energy system in a world of rapidly shifting risks, political turmoil, and complex laws and institutions?
25/04/2018 → 26/04/2018
Hanover, United States
**Toward more sustainable bioplastics: Opportunities in using different feedstocks**

Period: 25 Apr 2018

Ólafur Ögmundarson (Invited speaker)

Sumesh Sukumara (Other)

Peter Fantke (Other)

Novo Nordisk Foundation Center for Biosustainability

Quantitative Sustainability Assessment

iLoop

Department of Management Engineering

Global Econometric Modeling

**Description**

Presentation at the II International Seminar 2018 - Plastics are Future

Degree of recognition: International

Links:

http://www.plasticsarefuture.com/programme.php (Conference programme)

**Related event**

**Plastics are Future: II International Seminar 2018**

24/04/2018 → 25/04/2018

Valencia, Spain

Activity: Talks and presentations › Conference presentations

**Energy, Disaster, and Resilience Workshop**

Period: 24 Apr 2018 → 26 Apr 2018

Daniel Møller Sneum (Participant)

Department of Management Engineering

Systems Analysis

**Description**

Presenter and participant in the Arthur L. Irving Institute for Energy and Society's workshop on resilience

Degree of recognition: International

Documents:

Integrating variable renewables in extreme weather

**Related event**

**Energy, Disaster, and Resilience Workshop: How do we create a resilient energy system in a world of rapidly shifting risks, political turmoil, and complex laws and institutions?**

25/04/2018 → 26/04/2018

Hanover, United States

Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**District energy in North-eastern universities – greener and more flexible**

Period: 19 Apr 2018

Daniel Møller Sneum (Guest lecturer)

Department of Management Engineering

Systems Analysis

**Description**

Talk on research findings.

Degree of recognition: Regional

Documents:
District energy in North-eastern universities – greener and more flexible

Related external organisation

Dartmouth College
United States
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Perspektiver på digital transformation
Period: 18 Apr 2018
Christine Ipsen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: National

Related external organisation

Langebæk A/S
Gydevang 24, 3450, Lillerød, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Bicycle accidents in Denmark – the contribution of cyclist behavior, the vehicle and the road
Period: 17 Apr 2018
Mette Møller (Speaker)
Kira Hyldekaer Janstrup (Other)
Ninette Pilegaard (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management
Systems Analysis
Degree of recognition: International

Related event

Transport Research Arena 2018
16/04/2018 → 19/04/2018
Vienna, Austria
Activity: Talks and presentations › Conference presentations

EURITO H2020 RIA - First Policy Workshop at European Commission in Brussels
Period: 17 Apr 2018
Anja Maier (Panel member)
Department of Management Engineering
Engineering Systems

Description
EURITO Policy Workshop at European Commission in Brussels
Degree of recognition: International
Links:
http://www.nesta.org.uk/project/eurito (EURITO - EU Relevant, Inclusive, Timely, Trusted, and Open Research Innovation Indicators)
Related event

EURITO H2020 RIA - First Policy Workshop at European Commission in Brussels
17/04/2018 → 17/04/2018
Brussels, Belgium
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

The road and its influence on bicycle accidents in Denmark
Period: 17 Apr 2018
Kira Hyldekær Janstrup (Speaker)
Mette Møller (Other)
Ninette Pilegaard (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management
Systems Analysis
Degree of recognition: International

Related event

Transport Research Arena 2018
16/04/2018 → 19/04/2018
Vienna, Austria
Activity: Talks and presentations › Conference presentations

Regional Climate Change for Europe; From PRUDENCE and ENSEMBLES to CORDEX – a consistent story
Period: 13 Apr 2018
Jens Hesselbjerg Christensen (Guest lecturer)
Morten Andreas Dahl Larsen (Guest lecturer)
Ole Bøssing Christensen (Guest lecturer)
Martin Stendel (Guest lecturer)
Martin Drews (Guest lecturer)
Department of Management Engineering
Systems Analysis
Degree of recognition: International

Related event

EGU General Assembly: 2018
08/04/2018 → 13/04/2018
Vienna, Austria
Activity: Talks and presentations › Conference presentations

Improvements in organization workshop
Period: 9 Apr 2018 → 10 Apr 2018
Christine Ipsen (Participant)
Kasper Edwards (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event
Improvements in organization workshop: Data analysis & revising manuscript
09/04/2018 → 10/04/2018
Stockholm, Sweden
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Flexibility in district energy systems
Period: 2 Apr 2018
Daniel Møller Sneum (Guest lecturer)
Department of Management Engineering
Systems Analysis

Description
Talk at Yale School of Forestry & Environmental Studies
Documents:
Yale - district energy and flexibility

Related external organisation
Yale University
United States
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Smart Cities and Energy: District Energy Innovation
Period: 19 Mar 2018 → 20 Mar 2018
Daniel Møller Sneum (Panel member)
Department of Management Engineering
Systems Analysis

Description
In panel: Danish experiences on energy- and heat planning
Degree of recognition: International

Related event
Smart Cities and Energy: District Energy Innovation
19/03/2018 → 20/03/2018
Pittsburgh, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Workshop om lysreklamer
Period: 14 Mar 2018
Mette Møller (Speaker)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Description
Adfærd og forskning i forhold til lysreklamer

Related organisation
Workshop om lysreklamer
Møller, M. (Speaker)
14 Mar 2018
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Annual Design Society Board of Management and Advisory Board Meeting
Period: 13 Mar 2018 – 16 Mar 2018
Anja Maier (Participant)
Department of Management Engineering
Engineering Systems
Degree of recognition: International
Links:
http://www.designsociety.org

Related event
Annual Design Society Board of Management and Advisory Board Meeting
13/03/2018 → 16/03/2018
Karlsruhe, Germany
Activity: Attending an event › Participating in or organising a conference

Influence of different crash characteristics on level of injury among cyclists
Period: 8 Mar 2018
Kira Hyldekaer Janstrup (Speaker)
Mette Møller (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management
Degree of recognition: International

Related event
XI ICTCT Workshop "Improving the safety of vulnerable road users"
08/03/2018 → 09/03/2018
Vancouver, Canada
Activity: Talks and presentations › Conference presentations

XI ICTCT Workshop "Improving the safety of vulnerable road users"
Period: 8 Mar 2018 → 9 Mar 2018
Mette Møller (Panel member)
Department of Management Engineering
Technology and Innovation Management
Transport DTU
Degree of recognition: International

Related organisation
XI ICTCT Workshop "Improving the safety of vulnerable road users"
Møller, M. (Panel member)
8 Mar 2018 → 9 Mar 2018
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

CampusEnergy2018
Period: 5 Mar 2018 → 9 Mar 2018
Daniel Møller Sneum (Participant)
Department of Management Engineering
Systems Analysis

Description
Research interviews with participating stakeholders
Degree of recognition: National
Related event

CampusEnergy2018
05/03/2018 → 09/03/2018
Baltimore, United States
Activity: Attending an event › Participating in or organising a conference

British academy of Management (BAM) Conference 2018 (Event)
Period: 1 Mar 2018 → 1 Jun 2018
Christine Ipsen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event

British academy of Management (BAM) Conference 2018: Driving productivity in uncertain and challenging times
04/09/2018 → 06/09/2018
Bristol, United Kingdom
Activity: Research › Peer review of manuscripts

Innovation in FM and stakeholder interactions
Period: 27 Feb 2018
Giulia Nardelli (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: National

Related event

CFM Forskning i 10 år: De vigtigste resultater og perspektiver
27/02/2018 → …
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Integrating operational knowledge in building design
Period: 27 Feb 2018
Helle Lohmann Rasmussen (Speaker)
Department of Management Engineering
Systems Analysis
Documents:
Helr Presentation

Related event

CFM Forskning i 10 år: De vigtigste resultater og perspektiver
27/02/2018 → …
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

4th Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Copenhagen
Period: 26 Feb 2018 → 27 Feb 2018
Anja Maier (Organizer)
Department of Management Engineering
Engineering Systems

**Related event**

*4th Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Copenhagen*

*26/02/2018 → 27/02/2018*

*Lyngby, Denmark*

Activity: Attending an event › Participating in or organising a conference

**PhD committee: Encouraging Residential Energy Efficiency Improvements (Event)**

*Period: 23 Feb 2018*

*Henrik Klinge Jacobsen (Chairman)*

*Department of Management Engineering*

*Systems Analysis*

**Description**

PhD committee: Encouraging Residential Energy Efficiency Improvements

*Sebastian Christoph Petersen*

**Related event**

*PhD committee: Encouraging Residential Energy Efficiency Improvements*

*23/02/2018 → …*

Activity: Membership › Membership in review committee

**Challenges of Data Availability for Analysing the Water-Energy Nexus**

*Period: 5 Feb 2018 → 7 Feb 2018*

*Morten Andreas Dahl Larsen (Other)*

*Martin Drews (Speaker)*

*Stefan Petrovic (Other)*

*Kenneth Bernard Karlsson (Other)*

*Department of Management Engineering*

*Systems Analysis*

*Degree of recognition: International*

**Related event**

*climate change and water 2018*

*05/02/2018 → 07/02/2018*

*Tours, France*

Activity: Talks and presentations › Conference presentations

**Deep Learning from Crowds**

*Period: 2 Feb 2018 → 7 Feb 2018*

*Filipe Rodrigues (Speaker)*

*Department of Management Engineering*

*Transport DTU*

*Transport Modelling*

*Degree of recognition: International*

**Related event**

*The Thirty-Second AAAI Conference on Artificial Intelligence (AAAI), 2018*

*02/03/2017 → 07/03/2018*

Activity: Talks and presentations › Conference presentations
**Dartmouth College**  
Period: Jan 2018 → Apr 2018  
Daniel Møller Sneum (Visiting researcher)  
Department of Management Engineering  
Systems Analysis  

**Description**  
Visiting scholar at Darmouth College, US (flexible district energy systems)  
Degree of recognition: International  
Activity: Visiting an external institution › Visiting another research institution

**Nanyang Technological University**  
Period: Jan 2018 → Apr 2018  
Florence Alexia Bohnes (Visiting researcher)  
Department of Management Engineering  
Quantitative Sustainability Assessment  

**Description**  
Collaboration with NAFTEC NTU in the framework of the Joint PhD program  
Activity: Visiting an external institution › Visiting another research institution

**Erfaringer med supplerende uheldsdata i Danmark**  
Period: 31 Jan 2018  
Mette Møller (Speaker)  
Kira Hyldekræ Janstrup (Other)  
Mikkel Bøg Clemmensen (Other)  
Department of Management Engineering  
Technology and Innovation Management  
Transport DTU  
Transport Modelling  
Degree of recognition: National  

**Related event**  
**Er grundlaget for prioritering af vejvedligeholdelse i orden?**  
31/01/2018 → …  
Nyborg, Denmark  
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

**Vejen og omgivelsernes betydning for trafiksikkerheden**  
Period: 31 Jan 2018  
Kira Hyldekræ Janstrup (Speaker)  
Department of Management Engineering  
Transport DTU  
Transport Modelling  
Degree of recognition: National  

**Related event**  
**Er grundlaget for prioritering af vejvedligeholdelse i orden?**  
31/01/2018 → …  
Nyborg, Denmark  
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations
Workshop - Resultater fra spørgeskema
Period: 31 Jan 2018
Kira Hyldekaer Janstrup (Speaker)
Mette Møller (Other)
Ninette Pilegaard (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management
Systems Analysis
Degree of recognition: National

Related event
Er grundlaget for prioritering af vejværdigeholdelse i orden?
31/01/2018 → …
Nyborg, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Review of environmental sustainability assessments of aquaculture systems: main findings and outlook
Period: 27 Jan 2018
Florence Alexia Bohnes (Guest lecturer)
Department of Management Engineering
Quantitative Sustainability Assessment
Documents:
Abstract ICSGA 2018 - flbo ORBIT pre print

Related event
International Conference on Sustainable Global Aquaculture
24/01/2018 → 26/01/2018
Bangkok, Thailand
Activity: Talks and presentations › Conference presentations

2nd DTU Project Risk Forum
Period: 26 Jan 2018
Josef Oehmen (Chairman)
Pelle Lundquist Willumsen (Organizer)
Department of Management Engineering
Engineering Systems

Description
1 day workshop for project risk management professionals at DTU from industry and government.

Related event
2nd DTU Project Risk Forum: The Value of Risk Management
26/01/2018 → 26/01/2018
Kongens Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Collaborative process innovation for new process development
Period: 25 Jan 2018
Giulia Nardelli (Speaker)
Department of Management Engineering
Consistency and Main Differences Between European Regional Climate Downscaling Intercomparison Results: From PRUDENCE and ENSEMBLES to CORDEX

Period: 25 Jan 2018 → 28 Jan 2018

Ole Bøssing Christensen (Speaker)
Morten Andreas Dahl Larsen (Other)
Martin Drews (Other)
Martin Stendel (Guest lecturer)
Jens Hesselbjerg Christensen (Guest lecturer)
Department of Management Engineering
Systems Analysis
Degree of recognition: International

Related event

6th EURO-CORDEX General Assembly
Period: 25/01/2018 → 28/01/2018
Hamburg, Germany
Activity: Talks and presentations › Conference presentations

Hong Kong Polytechnic University

Period: 22 Jan 2018 → 26 Jan 2018
Harilaos N. Psaraftis (Visiting researcher)
Department of Management Engineering
Management Science
Transport DTU
Operations Management

Description
My final visit as Departmental Academic Advisor, Department of Logistics and Maritime Studies. Term was 2012 to 2018.
Degree of recognition: International
Activity: Visiting an external institution › Visiting another research institution

Co-developing agile stage-gate in Danish SMEs
Period: 11 Jan 2018 → 13 Jan 2018
Giulia Nardelli (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Conference paper in conference proceedings and presentation in Track 5: "Quality of collaborative engagements" of Pin-C 2018, Eskiltuna (SVE)
Degree of recognition: International
Factors contributing to Bicycle accidents in Denmark - a study based on medical records
Period: 10 Jan 2018
Mette Møller (Speaker)
Kira Hyldekær Janstrup (Other)
Department of Management Engineering
Technology and Innovation Management
Transport DTU
Transport Modelling
Description
Presentation at IRTAD/NHTSA Session at TRB conference in Washington DC

Integrated hydrology in the COHERENT project
Period: 10 Jan 2018 → 12 Jan 2018
Morten Andreas Dahl Larsen (Guest lecturer)
Kirsten Halsnæs (Other)
Department of Management Engineering
Systems Analysis
Degree of recognition: International

38th International Conference on Information Systems (Event)
Period: 2017 → …
Giulia Nardelli (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

38th International Conference on Information Systems: Transforming Society with Digital Innovation
10/12/2017 → 13/12/2017
Seoul, Korea, Republic of
Activity: Research › Peer review of manuscripts
Boligselskabernes Landsforening (External organisation)
Period: 2017 → …
Per Anker Jensen (Member)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related external organisation

Boligselskabernes Landsforening
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Censor for 7 specialeprojekter ved Københavns Erhvervsakademi
Period: 2017 → …
Per Anker Jensen (External examiner)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: National
Activity: Examinations and supervision › External examination

CIB International Research Week 2017 (Event)
Period: 2017 → …
Giulia Nardelli (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review of research papers
Degree of recognition: International

Related event

CIB International Research Week 2017
11/09/2017 → 15/09/2017
Manchester, United Kingdom
Activity: Research › Peer review of manuscripts

Co-Supervisor for Lucas Lima, PhD
Period: 2017 → 2020
Maj Munch Andersen (Supervisor)
Department of Management Engineering
Activity: Examinations and supervision › Supervisor activities

Department of Management Engineering (Organisational unit)
Period: 2017 → …
Per Anker Jensen (Chairman)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Formand for bedømmelsesudvalg for Rikke Brinkø's PhD
Degree of recognition: International

Related organisation

Department of Management Engineering (Organisational unit)
Jensen, P. A. (Chairman)
2017 → …
Activity: Membership › Membership in review committee

Energy Journal (Journal)
Period: 2017
Emilie Rosenlund Soysal (Reviewer)
Department of Management Engineering
Systems Analysis

Description
Review of submitted article
Degree of recognition: International

Related journal

Energy Journal
0195-6574
BFI (2018): BFI-level 1, Scopus rating (2016): CiteScore 2.13 SJR 1.537 SNIP 1.305, ISI indexed (2013): ISI indexed yes,
Web of Science (2018): Indexed yes
Central database
Activity: Research › Peer review of manuscripts

Les ateliers de l'éthique (Journal)
Period: 2017
Martin Marchman Andersen (Reviewer)
Klemens Kappel (Editor)
Xavier Landes (Editor)
Department of Management Engineering
Technology and Innovation Management
Degree of recognition: International
Links:
https://www.erudit.org/en/journals/ateliers/2017-v12-n1-ateliers03284/

Related journal

Les ateliers de l'éthique
Local database
Activity: Research › Peer review of manuscripts

Norwegian University of Science and Technology (External organisation)
Period: 2017 → 2018
Per Anker Jensen (Member)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Medlem af bedømmelsesudvalg for Cristian Roberto Valle's PhD
Degree of recognition: International

Related external organisation
Pre-examiner of PhD-thesis by Elina Sillanpää
Period: 2017 → …
Per Anker Jensen (External examiner)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International
Activity: Examinations and supervision › External examination

Renovering på Dagsordenen (External organisation)
Period: 2017 → …
Per Anker Jensen (Member)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Følgegruppe medlem for Hvidbog om bygningsdrift
Degree of recognition: National

Related external organisation

Renovering på Dagsordenen
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Routledge, Taylor & Francis Group (Publisher)
Period: 2017 → …
Per Anker Jensen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review of a proposal for a new book on Facilities Management
Degree of recognition: International

Related Publisher

Routledge, Taylor & Francis Group
United Kingdom
Local database
Activity: Communication › Peer review of manuscripts

International Journal of Management Science and Engineering Management (Journal)
Period: Dec 2017
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Description
Review paper
Degree of recognition: International

Related journal
International Journal of Management Science and Engineering Management
1750-9653
Scopus rating (2016): CiteScore 0 SJR 0.112, ISI indexed (2013): ISI indexed no, Web of Science (2018): Indexed yes
Central database
Activity: Research › Journal editor

Nordic Journal of Working Life Studies (Journal)
Period: Dec 2017
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Description
Paper review
Degree of recognition: International

Related journal
Nordic Journal of Working Life Studies
2245-0157
Web of Science (2018): Indexed yes
Indexed in DOAJ
Local database
Activity: Research › Journal editor

Managing innovation processes through value co-creation
Period: 19 Dec 2017
Giulia Nardelli (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Description
Presentation at Center for Facilities Management Research Forum
Degree of recognition: Local

Related organisation
Managing innovation processes through value co-creation
Nardelli, G. (Invited speaker)
19 Dec 2017
Activity: Talks and presentations › Conference presentations

Applied nurse rostering at Danish hospitals in Region Zealand
Period: 15 Dec 2017
Niels-Christian Fink Bagger (Guest lecturer)
Department of Management Engineering
Management Science
Operations Research
Related event

Healthcare logistics: balancing between practice and theory
13/12/2017 → 15/12/2017
Activity: Talks and presentations › Conference presentations

Predicting for the adaptive transport system and other necessary ingredients for resilient urban mobility
Period: 15 Dec 2017
Filipe Rodrigues (Invited speaker)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event

Leveraging Big Data for Future Mobility Workshop
15/12/2017 → 15/12/2017
Munich, Germany
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Asia Pacific Carbon Forum 2018
Period: 13 Dec 2017 → 15 Dec 2017
Susanne Konrad (Organizer)
Fatima-Zahra Taibi (Organizer)
Department of Management Engineering
UNEP DTU Partnership
Degree of recognition: International

Related event

Asia Pacific Carbon Forum 2018 : TOWARDS A REGIONAL ACTION AGENDA FOR ASIA-PACIFIC: COOPERATIVE CLIMATE ACTION & SPURRING INVESTMENT
13/12/2017 → 15/12/2017
Bangkok, Thailand
Activity: Attending an event › Participating in or organising a conference

Bæredygtighedsmål – hot or not?
Period: 13 Dec 2017
Ivan Nygaard (Panel member)
Department of Management Engineering
UNEP DTU Partnership

Description
Panel deltager på konferencen, Energi på toppen: Hvad koster bæredygtighed ? afholdt I anledning af Dansk Fjernvarme's 60 års jubilæum, Berlinske Media, København
Degree of recognition: National
Documents:
Program - Energi på Toppen - 13-12-2017

Related external organisation

Dansk Fjernvarme Forening
Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations
Challenges of Data Availability for Analysing the Water-Energy Nexus
Period: 13 Dec 2017
Morten Andreas Dahl Larsen (Speaker)
Martin Drews (Other)
Stefan Petrovic (Other)
Kenneth Bernard Karlsson (Other)
Department of Management Engineering
Systems Analysis
Degree of recognition: International

Related event
ETSAP water energy nexus workshop
13/12/2017 → 13/12/2017
Zürich, Switzerland
Activity: Talks and presentations › Conference presentations

Consistency and Main Differences Between European Regional Climate Downscaling Intercomparison Results; From PRUDENCE and ENSEMBLES to CORDEX
Period: 12 Dec 2017
Morten Andreas Dahl Larsen (Other)
Department of Management Engineering
Systems Analysis
Degree of recognition: International

Related event
2017 AGU Fall Meeting
11/12/2017 → 15/12/2017
New Orleans, United States
Activity: Talks and presentations › Conference presentations

Integrated Optimisation for Public Transport System with Joint Schedule- and Frequency-based Services
Period: 11 Dec 2017
Yu Jiang (Speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
22nd HKSTS Conference
Degree of recognition: International

Related external organisation
Hong Kong Society for Transportation Studies
Hong Kong
Activity: Talks and presentations › Conference presentations

How many EMA-workshops are needed to collect a representative sample of events in a hospital ward?
Period: 10 Dec 2017
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
11th NOVO Symposium: Measures to meet Nordic challenges for sustainable health care organizations
09/11/2017 → 10/11/2017
Gothenburg, Sweden
Activity: Talks and presentations › Conference presentations

Agile Stage Gate
Period: 6 Dec 2017
Kasper Edwards (Guest lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Præsentation af resultater fra Agile Stage-Gate projektet, med DI og GEMBA.
Degree of recognition: National

Bedre uheldsdata
Period: 6 Dec 2017 → 7 Dec 2017
Kira Hyldekær Janstrup (Other)
Mette Møller (Speaker)
Mikkel Bøg Clemmensen (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management
Documents:
Bedre trafikuheldsdata

Vejforum 2005
01/01/2005 → …
Nyborg Strand, Danmark
Activity: Talks and presentations › Conference presentations

DTU Sustain 2017
Period: 6 Dec 2017
Stig Irving Olsen (Organizer)
Katrine Nielsen (Organizer)
Berit Godskesen (Organizer)
Viggo Aaberg Kærn (Organizer)
Department of Environmental Engineering
Urban Water Systems
Office for Innovation & Sector Services
Department of Management Engineering
Quantitative Sustainability Assessment
Degree of recognition: International

Related event
DTU Sustain 2017
06/12/2017 → 06/12/2017
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

DTU Sustain 2017
Period: 6 Dec 2017
Stig Irving Olsen (Organizer)
Katrine Nielsen (Organizer)
Berit Godskesen (Organizer)
Viggo Aaberg Kærn (Organizer)
Department of Environmental Engineering
Urban Water Systems
Office for Innovation & Sector Services
Department of Management Engineering
Quantitative Sustainability Assessment
Degree of recognition: International

Related event
DTU Sustain 2017
06/12/2017 → 06/12/2017
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

On the importance of including a life cycle perspective in assessing the environmental performances of renewable energies
Period: 6 Dec 2017
Monia Niero (Speaker)
Department of Management Engineering
Quantitative Sustainability Assessment
Degree of recognition: National

Related event
Sustain 2017
06/12/2017 → 06/12/2017
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

The COHERENT Project
Period: 6 Dec 2017
Morten Andreas Dahl Larsen (Guest lecturer)
Kirsten Halsnæs (Other)
Department of Management Engineering
Systems Analysis

Description
Coastal hazard risk reduction and management
Degree of recognition: Regional
Documents:
SUSTAIN poster

Related event

DTU Sustain 2017
06/12/2017 → 06/12/2017
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Toward more sustainable biochemical: Applying techno-economic and life-cycle assessments to target substances
Period: 6 Dec 2017
Ólafur Ógmundarson (Speaker)
Sumesh Sukumara (Panel member)
Peter Fantke (Panel member)
Novo Nordisk Foundation Center for Biosustainability
Quantitative Sustainability Assessment
Global Econometric Modeling
Department of Management Engineering

Related event

Sustain 2017
06/12/2017 → 06/12/2017
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Vejens skadespoint og trafiksikkerhed - Er der behov for et nyt skadespoint, som kan benyttes som trafiksikkerhedsindikator?
Period: 6 Dec 2017 → 7 Dec 2017
Kira Hyldekær Janstrup (Speaker)
Mette Møller (Other)
Ninette Pilegaard (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management
Systems Analysis

Related event

Vejforum 2005
01/01/2005 → …
Nyborg Strand, Danmark
Activity: Talks and presentations › Conference presentations

Agile Stage-Gate
Period: 5 Dec 2017
Kasper Edwards (Guest lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event
**AGIL STAGE-GATE: En metode til accelereret produktudvikling**

05/12/2017 → 05/12/2017
Silkeborg, Denmark

Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

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**Risk Powers Innovation**

Period: 5 Dec 2017

Josef Oehmen (Invited speaker)

Department of Management Engineering
Engineering Systems

**Description**
From Stakeholder Values to Project Risk Management: Enabling Innovation in Engineering Organizations

Links:

**Related event**

**International Risk Management Conference: IDA/RISK Conference**

01/12/2011 → …
Copenhagen, Denmark

Activity: Talks and presentations › Conference presentations

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**Trade in Environmentally Sound Technologies**

Period: 5 Dec 2017

Ivan Nygaard (Speaker)

Department of Management Engineering
UNEP DTU Partnership

**Description**
Presentation at Stakeholder Workshop on Trade in Environmentally Sound Technologies in the East African Region, ACTS Kenya.

Degree of recognition: International

**Related event**

**Stakeholder Workshop on Trade in Environmentally Sound Technologies in the East African Region**

05/12/2017 → 05/12/2017
Nairobi, Kenya

Activity: Talks and presentations › Conference presentations

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**31st Conference on Neural Information Processing Systems**

Period: 4 Dec 2017 → 9 Dec 2017

Filipe Rodrigues (Participant)

Department of Management Engineering
Transport DTU
Transport Modelling

Degree of recognition: International

**Related event**

**31st Conference on Neural Information Processing Systems**

04/12/2017 → 09/12/2017
Long Beach, United States

Activity: Attending an event › Participating in or organising a conference
**Agile Stage Gate - morgenmøde København**

Period: 4 Dec 2017

Kasper Edwards (Guest lecturer)

Department of Management Engineering

Management Science

Implementation and Performance Management

Degree of recognition: National

**Related event**

**AGIL STAGE-GATE: En metode til accelereret produktudvikling**

04/12/2017 → 04/12/2017

København, Denmark

Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

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**Participatory Innovation Conference (Event)**

Period: Nov 2017 → …

Giulia Nardelli (Reviewer)

Department of Management Engineering

Management Science

Implementation and Performance Management

**Description**

Peer review of conference papers for Pin-C 2018, Eskiltuna (SVE)

Degree of recognition: International

**Related event**

**Participatory Innovation Conference**

01/01/2011 → …

Sønderborg

Activity: Research › Peer review of manuscripts

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**The choice of staying in Academia**

Period: 29 Nov 2017

Christine Ipsen (Guest lecturer)

Department of Management Engineering

Management Science

Implementation and Performance Management

Degree of recognition: International

**Related event**

**5th Scandinavian Academy of Industrial Engineering and Management**

27/11/2017 → 29/11/2017

Trondheim, Norway

Activity: Talks and presentations › Conference presentations

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**Quality in coding of qualitative data: Atlas.ti and NVivo**

Period: 28 Nov 2017

Giulia Nardelli (Speaker)

Signe Poulsen (Speaker)

Department of Management Engineering

Management Science
Implementation and Performance Management
Degree of recognition: International

Related event

5th Scandinavian Academy of Industrial Engineering and Management
27/11/2017 → 29/11/2017
Trondheim, Norway
Activity: Talks and presentations › Conference presentations

5th Scandinavian Academy of Industrial Engineering and Management (Event)
Period: 27 Nov 2017
Giulia Nardelli (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Senior discussant (including manuscript review) in Ph.D. workshop
Degree of recognition: International

Related event

5th Scandinavian Academy of Industrial Engineering and Management
27/11/2017 → 29/11/2017
Trondheim, Norway
Activity: Research › Peer review of manuscripts

5th Scandinavian Academy of Industrial Engineering and Management (Event)
Period: 27 Nov 2017
Christine Ipsen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
PhD workshop - reviewing PhD projects
Degree of recognition: International

Related event

5th Scandinavian Academy of Industrial Engineering and Management
27/11/2017 → 29/11/2017
Trondheim, Norway
Activity: Research › Peer review of manuscripts

On the challenges for Life Cycle Assessment in a Circular Economy: from single to multiple life cycles modelling
Period: 24 Nov 2017
Monia Niero (Invited speaker)
Department of Management Engineering
Quantitative Sustainability Assessment
Degree of recognition: National

Related event

Spanish LCA Network workshop
24/11/2017 → 24/11/2017
Santander, Spain
Taxes and subsidies in Danish energy policy. Comments to report IV from inter ministerial working group
Period: 23 Nov 2017
Henrik Klinge Jacobsen (Guest lecturer)
Department of Management Engineering

Description
Presentation at meeting in Dansk Energi Økonomisk forening 23 november 2017
Degree of recognition: National
Documents:
Dansk Energi Økonomisk forening 23 nov 2017 ver 2

Related external organisation
Dansk Energi
Rosenørns Allé 9, 1970, Frederiksberg C, Denmark

IEA Wind TCP Report Launch Event (Wind Task 26)
Period: 22 Nov 2017
Lena Kitzing (Organizer)
Jonas Katz (Organizer)
David Fernando Mora Alvarez (Organizer)
Department of Management Engineering
Systems Analysis

Description
Full day event to launch the IEA Wind Task 26 report on impacts of wind turbine technology on the system value of wind;
Launch of data viewer on the IEA Wind website.

The IEA Wind TCP Task 26 presented its ongoing work and its members were there for network opportunities, including
National Renewable Energy Laboratory (NREL), Lawrence Berkeley Institute (LBNL), Joint Research Centre (EC-JRC),
Fraunhofer IWES, Deutsche WindGuard, Dublin Institute of Technology (DIT), Offshore Renewable Energy (ORE)
Catapult, Norwegian Water Resources and Energy Directorate (NVE), Swedish Energy Agency (SEA), Denmark Technical
University (DTU) and Ea Energy Analyses.

Speakers include Maureen Hand (NREL), Ryan Wiser (LBNL), Thomas Korzeniewski (Vestas), Frank Obermüller (DNV
GL), Johannes Thon (European Energy), Karsten Capion (Dansk Energi), Silke Lüers (Deutsche WindGuard), Alberto
Dalla Riva (EA Energy Analysis), János Hethey (EA Energy Analysis), Pablo Hevia-Koch (DTU), Lena Kitzing (DTU).

Degree of recognition: International
Documents:
Agenda
Hand - IEA Wind Task 26 Overview-Report Launch Event
Dalla Riva, Hethey - Impacts of Wind Turbine Technology on the System Value of Wind
Capion - Reflections on the report
Obermueller_system optimal wind locations
Thon-Developer Perspective
Korzeniewski - Vestas perspective
Wiser_Wind_ValueMitigation
Wiser_Wind_elicitation
Hevia-Koch_Cost of Visual Impact
Kitzing-RES-Auctions

Related event
IEA Wind TCP Report Launch Event (Wind Task 26): Impacts of Wind Turbine Technology on the System Value of Wind
22/11/2017 → 22/11/2017
Kgs. Lyngby, Denmark
Transformation of India's Transport Sector under global warming of 2oC and 1.5oC scenario

Period: 22 Nov 2017
Subash Dhar (Invited speaker)
Department of Management Engineering
Transport DTU
UNEP DTU Partnership
Degree of recognition: International
Documents:
Paris Agreement and Transport Scenarios Subash Dhar

Related event

Annual Chair Conference: Prospective for Energy-Climate Issues
22/11/2017 → 22/11/2017
Paris, France
Activity: Talks and presentations › Conference presentations

What is a risk?

Period: 21 Nov 2017
Josef Oehmen (Keynote speaker)
Department of Management Engineering
Engineering Systems

Description
Keynote on value-oriented risk management for large construction projects
Degree of recognition: National

Related event

Værdibyg Kick-Off Seminar on Risk Management
21/11/2017 → …
Activity: Talks and presentations › Conference presentations

Using LCA as a screening tool for bioenergy options – case study of a meat processing plant

Period: 20 Nov 2017 → 21 Nov 2017
Tracey Anne Colley (Guest lecturer)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Overview of gate-to-gate LCA of a meat processing plant, looking at Integrated Food Energy System (IFES) using recycled treated effluent to grow biomass on farms for thermal energy supply at site, along with integration of renewable (solar and wind) and other bioenergy (biogas, tallow biodiesel).
Documents:
TAC MB MZH_BioE 2017_rev2
Links:

Related event

BIOENERGY2017: 'Bioenergy – the reliable renewable'
19/11/2017 → 22/11/2017
Sydney, Australia
Activity: Talks and presentations › Conference presentations
Circular economy in the meat processing sector – using life cycle assessment as a screening tool
Period: 17 Nov 2017
Tracey Anne Colley (Guest lecturer)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Presentation at Academic Symposium, as part of a conference
Degree of recognition: Local
Documents:
TAC Circ Eco ppt
Links:
https://www.poweringthechange.org.au/symposiumfri17nov/ (Program for the Academic Symposium, which was held as part of the inaugural "Powering the change to a circular economy" conference. )

Related event

Powering the change to a circular economy
14/11/2017 → 16/11/2017
Adelaide, Australia
Activity: Talks and presentations › Conference presentations

Accident Analysis & Prevention (Journal)
Period: 15 Nov 2017 → …
Kira Hyldekær Janstrup (Reviewer)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
Reviewer
Degree of recognition: International

Related journal

Accident Analysis & Prevention
0001-4575
Central database
Activity: Research › Peer review of manuscripts

IDA Sundhed
Period: 8 Nov 2017
Christine Ipsen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
På dette gå-hjem-møde skal vi bl.a. høre eksempler på mulighederne inden for Industri 4.0 samt hvordan det bruges til udvikling af nye komponenter til sundhedssektoren, Big Data mv.
Degree of recognition: National

Related event

IDA Sundhed - Industri 4.0 inden for Sundhedssektoren
08/11/2017 → 08/11/2017
Key findings of the 2017 Adaptation Gap Report
Period: 8 Nov 2017
Anne Olhoff (Guest lecturer)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentation at the official joint UNFCCC and UN Environment Adaptation Gap Report launch event. UNFCCC COP 23, Bonn, Germany, November 2017.
Degree of recognition: International
Documents:
The Adaptation Gap 2017_Presentation

Related external organisation
UNFCCC
Activity: Talks and presentations › Conference presentations

Muligheder ved digitalisering og Industri 4.0
Period: 8 Nov 2017
Christine Ipsen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Præsentation om overvejelser i relation til Valg af strategi Ændringer i organisationen Fokus på implementeringen Samt erfaringer med digital ledelse vha. tele-presence robotter
Degree of recognition: National

Related external organisation
IDA Sundhedsteknologi
Copenhagen, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Asfaltindustriens valgmøde i Aarhus
Period: 7 Nov 2017
Kira Hyldekær Janstrup (Invited speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Related event
Asfaltindustriens valgmøde
25/10/2017 → 07/11/2017
Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations
The Emissions Gap Report 2017: overview of key issues and findings.
Period: 7 Nov 2017
Anne Olhoff (Guest lecturer)
Department of Management Engineering
UNEP DTU Partnership

Description
Degree of recognition: International

Related external organisation
UNFCCC
Activity: Talks and presentations › Conference presentations

10th Urban Mobility Conference and Expo 2017
Period: 4 Nov 2017
Subash Dhar (Organizer)
Department of Management Engineering
Transport DTU
UNEP DTU Partnership

Description
A Study of Electric Mobility for City of Hyderabad
Degree of recognition: International
Documents:
UMI - Electric Mobility Hyderabad Final

Related event
10th Urban Mobility Conference and Expo 2017
04/11/2017 → 06/11/2017
Hyderabad, India
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Laura Punnett
Start date: 3 Nov 2017
Christine Ipsen (Host)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Process evaluation, organizational learning, and impact analysis: Work in progress at CPH-NEW
Degree of recognition: International
Activity: Hosting a guest lecturer

The effect of light rail construction on business: The case of Lyngby, Denmark
Period: 2 Nov 2017 → 5 Feb 2018
Jay Sterling Gregg (Main supervisor)
Department of Management Engineering
Systems Analysis

Description
Bachelor Project
Activity: Examinations and supervision › Supervisor activities
**Asfaltindustriens valgmøde i Guldborgsund**

**Period:** 1 Nov 2017

Kira Hyldekaer Janstrup (Invited speaker)

Department of Management Engineering

Transport DTU

Transport Modelling

**Related event**

**Asfaltindustriens valgmøder**

25/10/2017 → 07/11/2017

Denmark

Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

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**Better but is it good enough? Absolute sustainability requirements and how they challenge the food sector**

**Period:** 1 Nov 2017 → 2 Nov 2017

Yan Dong (Guest lecturer)

Michael Zwicky Hauschild (Guest lecturer)

Department of Management Engineering

Quantitative Sustainability Assessment

**Description**

In a world with a rapidly growing population, increasing standards of living and pressing needs to reduce human impacts on environment and climate UN’s member states have agreed on a global sustainable development agenda towards 2030. A sustainable development calls for vast improvements in the eco-efficiency of our food production systems (more people fed with considerably less environmental impact), and Life cycle assessment (LCA) is introduced as a tool to measure eco-efficiency and help gauge the environmental dimension of sustainability. The presentation gives an introduction to life cycle assessment as a tool to determine eco-efficiency of our technologies and help optimizing their functionality and minimizing their negative environmental impacts. It discusses the sustainability challenge that faces food production in the future and demonstrates the need to go beyond eco-efficiency, and goes on to discuss absolute boundaries for environmental sustainability, metrics for gauging our solutions against these boundaries. Possible conflicts between food safety and sustainability are discussed together with ways to address them based on a combined assessment of risk and sustainability

**Related event**

**China International Food Safety & Quality Conference**

01/11/2017 → 02/11/2017

Beijing, China

Activity: Talks and presentations › Conference presentations

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**Role of Energy Efficiency for Low Carbon Transformation of India**

**Period:** 1 Nov 2017 → 3 Nov 2017

Subash Dhar (Guest lecturer)

Department of Management Engineering

Transport DTU

UNEP DTU Partnership

Degree of recognition: International

Documents:

Role of EE LCT India _01Nov

**Related event**

**3rd International Conference of Low Carbon Asia & Beyond,**

01/11/2017 → 03/11/2017

Bangkok, Thailand

Activity: Talks and presentations › Conference presentations
Asfaltindustriens valgmøde i Køge
Period: 26 Oct 2017
Kira Hyldekaer Janstrup (Invited speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Related event
Asfaltindustriens valgmøder
25/10/2017 → 07/11/2017
Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Asfaltindustriens valgmøde i Odense
Period: 25 Oct 2017
Kira Hyldekaer Janstrup (Invited speaker)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: National

Related event
Asfaltindustriens valgmøder
25/10/2017 → 07/11/2017
Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Qualitative data analysis and interpretation (and the use of Atlas.ti)
Period: 25 Oct 2017
Giulia Nardelli (Guest lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Guest lecture as part of the M.Sc. course in Research methodology for the Social Entrepreneurship and Management study line
Degree of recognition: Local

Related external organisation
Roskilde University
Roskilde, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Workshop contribution
Yutaka Yoshinaka (Speaker)
Department of Management Engineering
Technology and Innovation Management
Degree of recognition: International
Documents:
Towards New Affect Integrated Interaction Design (Event)
Period: 23 Oct 2017
Anja Maier (External examiner)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

Description
Norwegian University of Science and Technology, Department of Engineering Design and Materials, TrollLabs

Censor for PhD project

Body type: PhD Assessment Committee
23 October 2017
Degree of recognition: International
Activity: Examinations and supervision › External examination

Latin American and Caribbean Carbon Conference
Period: 18 Oct 2017 → 20 Oct 2017
Susanne Konrad (Organizer)
Fatima-Zahra Taibi (Organizer)
Department of Management Engineering
UNEP DTU Partnership

Description
The Latin American and Caribbean Carbon Forum (LACCF) is a unique, free of charge regional conference and exhibition platform established in 2006 to promote knowledge and information sharing while facilitating business opportunities among main climate finance and emission market stakeholders. This annual Conference and Exhibition is jointly organized by the World Bank Group, the Latin American Energy Organization (OLADE), the International Emissions Trading Association (IETA), the UN Environment and the UNEP DTU Partnership, the Inter-American Development Bank (IDB), the United Nations Framework Convention (UNFCCC) secretariat, the United Nations Development Program (UNDP) and the Development Bank of Latin America (CAF). The LACCF and the annual workshop of the Low Emission Development Strategies-LEDS-LAC were held back-to-back, becoming the largest climate mitigation event in the region in 2017.
Degree of recognition: International

Related event
Latin American and Caribbean Carbon Conference: Advancing the Paris Agreement: From Targets to Action
18/10/2017 → 20/10/2017
Mexico City, Mexico
Activity: Attending an event › Participating in or organising a conference

A decision support framework for circular economy implementation in the packaging sector. Lessons from the Carlsberg Circular Community
Period: 12 Oct 2017
Monia Niero (Invited speaker)
Department of Management Engineering
Quantitative Sustainability Assessment
Related event

Circular Economy Conference 2017
12/10/2017 → 12/10/2017
Herning, Denmark
Activity: Talks and presentations › Conference presentations

4th Improvements in Organizations workshop
Period: 11 Oct 2017
Signe Poulsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event

4th Improvements in Organizations workshop
10/10/2017 → 12/10/2017
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Flexible Electricity Markets for decarbonized systems
Period: 11 Oct 2017
Klaus Skytte (Guest lecturer)
Department of Management Engineering
Systems Analysis

Description
Eurelectric, Market Design 2050 Workshop
Bruxelles, 11 October 2017
Degree of recognition: International
Documents:
EurElectric_market_design_klaus_111017

Related external organisation

Eurelectric
Boulevard de l’Impératrice, 66, 1000, Brussels, Belgium
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Sustainability assessment of stormwater management systems and the importance of pollutants in runoff
Period: 11 Oct 2017
Sarah Brudler (Guest lecturer)
Karsten Ambjerg-Nielsen (Other)
Christian Ammitsøe (Other)
Michael Zwicky Hauschild (Guest lecturer)
Martin Rygaard (Guest lecturer)
Department of Environmental Engineering
Urban Water Systems
Department of Management Engineering
Quantitative Sustainability Assessment
Degree of recognition: International

Related event
4th Improvements in Organizations workshop
**Period:** 10 Oct 2017 → 12 Oct 2017
Kasper Edwards (Organizer)
Christine Ipsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

**Related event**

4th Improvements in Organizations workshop
10/10/2017 → 12/10/2017
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**SS Corporate Garage: Automation with a Human Touch Design Sprint**
**Period:** 9 Oct 2017
Christine Ipsen (Panel member)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: National

**Related event**

SS Corporate Garage: Automation with a Human Touch Design Sprint
09/10/2017 → 09/10/2017
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Guest speaker on Learning Lab workshop on assessment of large classes**
**Period:** 6 Oct 2017
Signe Poulsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Activity: Other

**Consistency and main differences between European regional climate downscaling intercomparison projects**
**Period:** 5 Oct 2017
Morten Andreas Dahl Larsen (Guest lecturer)
Department of Management Engineering
Systems Analysis

**Related event**

EsacP meeting: Annual meeting
05/10/2017 → 06/10/2017
Lyngby, Denmark
International Journal of Healthcare Technology and Management (Journal)
Period: 5 Oct 2017 → 15 Nov 2017
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review of manuscript

Related journal
International Journal of Healthcare Technology and Management
1368-2156
BFI (2018): BFI-level 2, Scopus rating (2016): CiteScore 0.27 SJR 0.13 SNIP 0.058, Web of Science (2018): Indexed yes
Central database

Period: 4 Oct 2017 → 9 Oct 2017
Angreine Kewo (Speaker)
Department of Management Engineering
Degree of recognition: International

Related event
04/10/2017 → 09/10/2017
Dubrovnik, Croatia

How can we stimulate and exploit a market in Africa for small wind turbines?
Period: 2 Oct 2017
Ivan Nygaard (invited speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentation in the session: Visionary projects in wind energy
Degree of recognition: International
Documents:
wind energy denmark Ivan Nygaard 3

Related event
WIND ENERGY DENMARK 2017
02/10/2017 → 03/10/2017
Herning, Denmark

International Journal of Workplace Health Management (Journal)
Period: 1 Oct 2017 → 1 Dec 2018
Christine Ipsen (Editor)
Department of Management Engineering
Review of district heating regulation in selected European countries

Period: 1 Oct 2017 → 15 Dec 2017

Daniel Møller Sneum (Consultant)
Department of Management Engineering
Systems Analysis

Description
Review and drafting of internal report on the regulation of district heating in European countries
Degree of recognition: National

Related external organisation
Danish Energy Agency
Denmark
Activity: Public and private sector consultancy › Public sector consultancy

Space Management of Higher Education Facilities

Period: 29 Sep 2017
Per Anker Jensen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Per Anker Jensen holdt indlæg om Space Management of Higher Education Facilities ved 2nd Annual Summit on Innovative Learning Spaces den 28.-29. september 2017 i Prag
Degree of recognition: International

Related event
Innovative Learning Spaces: 2nd annual summit
28/09/2017 → 29/09/2017
Prag
Activity: Talks and presentations › Conference presentations

Norwegian University of Life Sciences (External organisation)
Period: 22 Sep 2017
Klaus Skytte (Participant)
Department of Management Engineering
Systems Analysis

Description
PhD evaluation committee, Philosophiae Doctor (PhD), Jon Gustav Kirkerud, Faculty of Environmental Sciences and Natural Resource Management, Norwegian University of Life Sciences
Degree of recognition: International
Digitalisering, Industri 4.0 og distanceledelse
Period: 21 Sep 2017
Christine Ipsen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: Local

Centret for Leåelse - Direktørnetværksmøde: Digitalisering og Distanceledelse
21/09/2017 → 21/09/2017
Helsingør, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Muligheder og overvejelser i Industri 4.0
Period: 21 Sep 2017
Christine Ipsen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Præsentation ved direktørnetværksmøde om overvejelser i relation til
Valg af strategi
Ændringer i organisationen
Fokus på implementeringen
Samt erfaringer med digital ledelse vha. tele-presence robotter

CFL - Center for Leåelse
Copenhagen, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

A Simulation-based Markov Decision Process for the Scheduling of Operating Theatres
Period: 20 Sep 2017 → 22 Sep 2017
Anders Reenberg Andersen (Guest lecturer)
Department of Management Engineering
Management Science
Operations Research
Degree of recognition: International
Documents:
Abstract

European Conference on Stochastic Optimization 2017
20/09/2017 → 22/09/2017
Rom, Italy
Activity: Talks and presentations › Conference presentations
**Risk as a feeling - Psychometric Risk Assessment**

*Period: 20 Sep 2017*

Josef Oehmen (Keynote speaker)

Department of Management Engineering

**Description**
Master Class for the Executive Master in Risk Management, University of Twente

Degree of recognition: International

**Related external organisation**
University of Twente
Twente, Netherlands

Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

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**3rd Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Munich**

*Period: 19 Sep 2017 → 20 Sep 2017*

Anja Maier (Participant)

Department of Management Engineering

**Description**

Activity: Talks and presentations › Conference presentations

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**Langsigtede strategiske partnerskab**

*Period: 19 Sep 2017*

Per Anker Jensen (Invited speaker)

Department of Management Engineering

Management Science

**Description**


Degree of recognition: National

**Related event**

**REBUS debatmøde**

20/10/2017 → ...

Aarhus

Activity: Talks and presentations › Conference presentations

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**NES 2017 "Joy at work"**

*Period: 19 Sep 2017 → 23 Sep 2017*

Kasper Edwards (Organizer)

Department of Management Engineering

Management Science
Implementation and Performance Management
Degree of recognition: International

Related event

NES 2017 "Joy at work"
20/08/2017 → 23/08/2017
Lund, Sweden
Activity: Attending an event › Participating in or organising a conference

Malardalen University
Period: 18 Sep 2017 → 13 Oct 2017
Christina Villefrance Møller (Visiting researcher)
Department of Management Engineering
Management Science
Implementation and Performance Management
Activity: Visiting an external institution › Visiting another research institution

Facilities Management og Merværdi
Period: 14 Sep 2017
Per Anker Jensen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description

Related event

Netværksmøde om Facilities Management i Maskinmesterforeningen
14/09/2017 → …
Lyngby
Activity: Talks and presentations › Conference presentations

Network performance of autonomous cars at low market shares
Period: 14 Sep 2017
Andrea Vanesa Papu Carrone (Speaker)
Jeppe Rich (Other)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
In this paper we consider how network performance is affected by a mixture of two heterogeneous car classes, a class which is designed to mimic the behaviour of autonomous vehicles (AVs) and a class which is designed to mimic normal driver behaviour. This makes it possible to investigate network effects as a function of the market shares of AVs.
Degree of recognition: International

Related event

hEART 2017: 6th Symposium of the European Association for Research in Transportation
12/09/2017 → 14/09/2017
Haifa, Israel
Activity: Talks and presentations › Conference presentations
Classification of District Heat Heat Exchange Stations Using Smart Meter Data
Period: 13 Sep 2017
Alexander Martin Tureczek (Guest lecturer)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
4DH_AT_Orbit

Related event
3rd International Conference on Smart Energy Systems and 4th Generation District Heating
12/09/2017 → 13/09/2017
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Investigation of consumer's behavior towards investments in household energy efficient appliances
Period: 13 Sep 2017 → 15 Sep 2017
Mattia Baldini (Speaker)
Alessio Trivella (Other)
Jordan William Halverson Wente (Other)
Department of Management Engineering
Systems Analysis
Management Science
Operations Research
Description
The previous EEDAL conferences have been very successful in attracting an international audience. EEDAL has established itself as an influential and recognised international event to discuss the progress achieved and latest developments in technologies, behavioural aspects and policies. EEDAL is the venue to establish new collaborations and synergies and build international partnerships among stakeholders.
Degree of recognition: International
Documents:
SAVEE
Links:
http://eedal2017.uci.edu/schedule/

Related event
9th International Conference on Energy Efficiency in Domestic Appliances and Lighting
13/09/2017 → 15/09/2017
Irvine, United States
Activity: Talks and presentations › Conference presentations

Evaluation of regulation for flexibility – a methodology
Period: 12 Sep 2017
Daniel Møller Sneum (Guest lecturer)
Department of Management Engineering
Systems Analysis
Description
Regulatory changes for increased flexibility in the energy system entail socio-economic consequences, which must be evaluated in addition to the consequences for flexibility, to provide a comprehensive analysis of the impacts. This study proposes a methodology for such evaluation of regulation.
Degree of recognition: International
Documents:
20170912-4DH evaluation parameters-DMS

Related event
3rd International Conference on Smart Energy Systems and 4th Generation District Heating
12/09/2017 → 13/09/2017
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

hEART 2017: 6th Symposium of the European Association for Research in Transportation
Period: 12 Sep 2017 → 14 Sep 2017
Mads Paulsen (Participant)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event
hEART 2017: 6th Symposium of the European Association for Research in Transportation
12/09/2017 → 14/09/2017
Haifa, Israel
Activity: Attending an event › Participating in or organising a conference

Passenger arrival and waiting time distributions dependent on train service frequency and station characteristics: A smart card data analysis in Copenhagen
Period: 12 Sep 2017 → 14 Sep 2017
Jesper Bláfoss Ingvarsson (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event
hEART 2017: 6th Symposium of the European Association for Research in Transportation
12/09/2017 → 14/09/2017
Haifa, Israel
Activity: Talks and presentations › Conference presentations

Prediction Model Adaptation in Response to Traffic Disruptions
Period: 12 Sep 2017 → 14 Sep 2017
Inon Peled (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
Presented my research about quick adaptation of traffic prediction model per incident parameters.
Degree of recognition: International
Documents:
Related event

**hEART 2017: 6th Symposium of the European Association for Research in Transportation**
12/09/2017 → 14/09/2017
Haifa, Israel
Activity: Talks and presentations › Conference presentations

**MATSim User Meeting: Special Session @ hEART 2017**
Period: 11 Sep 2017
Mads Paulsen (Participant)
Department of Management Engineering
Transport DTU
Transport Modelling

**Description**
User meeting on the latest development of MATSim from users around the world.
Degree of recognition: International

Related event

**MATSim User Meeting: Special Session @ hEART 2017**
11/09/2017 → 11/09/2017
Haifa, Israel
Activity: Attending an event › Participating in or organising a conference

**Transferring knowledge from building operation to design - A literature review**
Period: 11 Sep 2017
Helle Lohmann Rasmussen (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
CIB Helle Lohmann Rasmussen

Related event

**CIB World Congress 2017**
11/09/2017 → 15/09/2017
Salford, United Kingdom
Activity: Talks and presentations › Conference presentations

**Interview for benchmarking the health cluster in Copenhagen - a study about the economic impact of the Meilahti campus health ecosystem in Helsinki**
Period: 7 Sep 2017
Kasper Edwards (Consultant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related external organisation

**Nordic Healthcare Group**
Vattuniemenranta 2, 4.krs , 00210, Helsinki, Finland
Activity: Public and private sector consultancy › Consultancy
Stowage planning: A benchmark and a novel heuristic
Period: 6 Sep 2017
Rune Larsen (Speaker)
Department of Management Engineering
Transport Modelling

Related event
International Conference on Operations Research 2017
06/09/2017 → 08/11/2017
Berlin, Germany
Activity: Talks and presentations › Conference presentations

Using OR + AI to predict the optimal production of offshore wind parks: a preliminary study
Period: 6 Sep 2017
Martina Fischetti (Guest lecturer)
Department of Management Engineering
Management Science
Operations Research
Description
In this paper we propose a new use of Machine Learning together with
Mathematical Optimization. We investigate the question of whether a machine,
trained on a large number of optimized solutions, can accurately estimate the value
of the optimized solution for new instances. We focus on instances of a specific
problem, namely, the offshore wind farm layout optimization problem. In this problem
an offshore site is given, together with the wind statistics and the characteristics
of the turbines that need to be built. The optimization wants to determine the optimal
allocation of turbines to maximize the park power production, taking the mutual interference
between turbines into account. Mixed Integer Programming models and
other state-of-the-art optimization techniques, have been developed to solve this
problem. Starting with a dataset of 2000+ optimized layouts found by the optimizer,
we used supervised learning to estimate the production of new wind parks. Our
results show that Machine Learning is able to well estimate the optimal value of
offshore wind farm layout problems.
Documents:
ODS2017Fisch

Related event
International Conference on Optimization and Decision Science
04/09/2017 → 07/09/2017
Activity: Talks and presentations › Conference presentations

A decision support framework for circular economy implementation in the packaging sector. Lessons from the Carlsberg
Circular Community
Period: 5 Sep 2017
Monia Niero (Invited speaker)
Department of Management Engineering
Quantitative Sustainability Assessment
Description
Invited presentation at discussion panel on "LCM approaches to support Circular Economy"
Degree of recognition: International

Related event
From scientific knowledge to business practice: how to bridge the Life Cycle Assessment (LCA) reporting strategy gap?

Period: 5 Sep 2017

Monia Niero (Speaker)
Alexandra Bonou (Other)
Stig Irving Olsen (Other)

Department of Management Engineering
Quantitative Sustainability Assessment

Description
Poster presentation
Degree of recognition: International

Related event

8th International Conference on Life Cycle Management: Designing sustainable technologies, products and policies: from science to innovation
03/09/2017 → 06/12/2017
Luxembourg City, Luxembourg
Activity: Talks and presentations › Conference presentations

Key note presentation: The link between transparency and ambition / UNEP Emissions Gap Report.

Period: 5 Sep 2017

Anne Olhoff (Keynote speaker)

UNEP DTU Partnership
Degree of recognition: International

Links:
https://www.transparency-partnership.net/

Related external organisation

GIZ
Germany
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

International Ergonomics Association Board meeting

Period: 2 Sep 2017 → 3 Sep 2017

Kasper Edwards (Other)

Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Participating as President of The Nordic Ergonomics and Human Factor Society
Degree of recognition: International

Activity: Other

International Journal of Workplace Health Management (Journal)

Period: 1 Sep 2017 → 1 Nov 2018

Christine Ipsen (Editor)

Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Guest editor of the Special Issue: Understanding successful organizational health interventions: The role of leadership
Degree of recognition: International

**Related journal**
*International Journal of Workplace Health Management*
1753-8351
BFI (2018): BFI-level 1, Scopus rating (2016): CiteScore 1.24 SJR 0.485 SNIP 1.324, ISI indexed (2013): ISI indexed no,
Web of Science (2018): Indexed yes
Central database
Activity: Research › Journal editor

**Life cycle assessment and its application in decision analysis**
Period: 1 Sep 2017 → 2 Sep 2017
Yan Dong (Guest lecturer)
Department of Management Engineering
Quantitative Sustainability Assessment

**Related event**
*Sino-Europa Resource Forum*
01/09/2017 → 02/09/2017
Odense, Denmark
Activity: Talks and presentations › Conference presentations

**Urban Rail Transit (Journal)**
Period: 1 Sep 2017 → …
Fabrizio Cerreto (Reviewer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

**Related journal**
*Urban Rail Transit*
2199-6687
Indexed in DOAJ
Central database
Activity: Research › Peer review of manuscripts

**Austrian Science Fund / Der Wissenschaftsfonds (External organisation)**
Period: Aug 2017 → Oct 2017
Per Dannemand Andersen (Chairman)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

**Description**
Review of research application

**Related external organisation**
**Conference: 4S/EASST 2017 Boston**
Period: 31 Aug 2017 → 2 Sep 2017
Meiken Hansen (Speaker)
Per Dannemand Andersen (Other)
Department of Management Engineering
Technology and Innovation Management
Documents:
Hansen Andersen abstract 4S

**Related event**

4S/EASST 2017 Boston: Annual Meeting of the Society for Social Studies of Science (4S)
30/08/2017 → 02/09/2017
Boston, United States
Activity: Talks and presentations › Conference presentations

**CFM workshop om FM værktøjer**
Period: 30 Aug 2017
Giulia Nardelli (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: Local

**Related event**

CFM workshop om FM værktøjer
22/05/2017 → 30/08/2017
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Joint Modelling of Schedule- and Frequency-based Services in Public Transport Assignment Models**
Period: 29 Aug 2017
Morten Eltved (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Documents:
Trafikdage_Presentation_Joint Modelling of Schedule- and Frequency-based Services in Public Transport Assignment Models

**Related event**

Trafikdage 2017
28/08/2017 → 29/08/2017
Aalborg, Denmark
Activity: Talks and presentations › Conference presentations

**Mobilitetspotentiale for Aarhus Letbane**
Period: 29 Aug 2017
Michael Bruhn Barfod (Guest lecturer)
Cyklistueld – hvilken betydning har vejen, køretøjet og trafikanten
Period: 28 Aug 2017 → 29 Aug 2017
Kira Hyldekær Janstrup (Speaker)
Mette Møller (Other)
Ninette Pilegaard (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Technology and Innovation Management
Systems Analysis

Related event

Trafikdage
23/08/2010 → 24/08/2010
Aalborg, Denmark
Activity: Talks and presentations › Conference presentations

Preliminary results from the project "Slow On the Bottle – Enjoy the Road (SOBER)*: Instruments to measure implicit associations towards drunkdriving and to change implicit drunk-driving associations
Period: 28 Aug 2017
Laila Marianne Martinussen (Speaker)
Department of Management Engineering
Technology and Innovation Management
Transport DTU
Degree of recognition: International
Documents:
62_LailaMartinussen

Related event

Aalborg Trafikdage 2009
01/01/2009 → …
Activity: Talks and presentations › Conference presentations

The influence of transit service frequency and station characteristics on passenger arrival time distributions: A smart card data analysis in the Greater Copenhagen Area
Period: 28 Aug 2017 → 29 Aug 2017
Jesper Blåfoss Ingvardson (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: National

Related event

Trafikdage 2017
28/08/2017 → 29/08/2017
Aalborg, Denmark
Activity: Talks and presentations › Conference presentations

ICED17: 21st International Conference on Engineering Design
Anja Maier (Chairman)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology
Degree of recognition: International
Links:
http://www.iced17.org

Related event

ICED17: 21st International Conference on Engineering Design
21/08/2017 → 25/08/2017
Vancouver, Canada
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Indonesia Development Forum
Period: 9 Aug 2017 → 10 Aug 2017
Angreine Kewo (Invited speaker)
Department of Management Engineering
Systems Analysis

Description
The Indonesia Development Forum (IDF) is a platform for Indonesian leaders in government, private sector, academia, and other members of society to collaborate to shape Indonesia's development agendas. This platform is initiated by Bappenas.
Degree of recognition: International

Related event

Indonesia Development Forum
09/08/2017 → 10/08/2017
Jakarta, Indonesia
Activity: Talks and presentations › Conference presentations

77th Annual meeting of the Academy of Management (Event)
Period: 4 Aug 2017
Francesco Rosati (Participant)
Department of Management Engineering
Technology and Innovation Management

Description
AOM 2017 Joint SIM-ONE Junior Faculty Consortium
Degree of recognition: International
Related event

77th Annual meeting of the Academy of Management: At the Interface
04/08/2017 → 08/08/2017
Atlanta, United States
Activity: Membership › Membership of research networks or expert groups

Ergonomics as a design discipline: Redesigning a local control room in an oil industry
Period: 1 Aug 2017
Daniel Braatz (Lecturer)
Ole Broberg (Lecturer)
Department of Management Engineering
Engineering Systems

Description
Workshop

Related event

12th International Symposium on Human Factors in Organizational Design and Management
31/07/2017 → 03/08/2017
Banff, Canada
Activity: Talks and presentations › Conference presentations

Reviewer for the Swedish Research Council FORMAS (External organisation)
Period: 1 Aug 2017 → 15 Sep 2017
Ivan Nygaard (Member)
Department of Management Engineering
UNEP DTU Partnership

Description
Member of evaluation panel for the Swedish Research Council for development research. Natural, engineering and environmental sciences (UF-3)
Degree of recognition: International
Links:
https://www.vr.se/inenglish/researchfunding/assessment/reviewpanels/developmentresearch/uf3naturalengineeringscience.html

Related external organisation

Reviewer for the Swedish Research Council FORMAS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

INFORMS Healthcare 2017
Period: 26 Jul 2017 → 28 Jul 2017
Anders Reenberg Andersen (Guest lecturer)
Department of Management Engineering
Management Science
Operations Research
Degree of recognition: International

Related event

INFORMS Healthcare 2017: Optimizing Operations & Outcomes
26/07/2017 → 28/07/2017
Rotterdam, Netherlands
Activity: Talks and presentations › Conference presentations
Comparison Between Young Male Drivers' Self-assessed and Objectively Measured Driving Skills
Period: 21 Jul 2017
Laila Marianne Martinussen (Speaker)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Description
Self-assessment of skills is a self-generated feedback process that contributes to confidence in one’s skills. The higher one’s self-assessed skills, the more likely one is to feel competent in a particular domain thereby influencing the related behaviors. Drivers' self-assessed driving skills are not always accurate, which may cause serious problems such as underestimation of risk, reckless driving and accidents. Most previous research on self-assessment of driving skills did not compare self-reported skills to objectively measured driving skills, so the aim of this study was to test the accuracy of young male drivers’ self-assessments of driving skills using a driving simulator, and to examine whether self-assessment accuracy varied with driving skill, experience or sensation-seeking propensity. Results showed that the drivers' self-assessments were inconsistent with their driving performance, and this inconsistency varied with driving skill, driving experience and sensation-seeking propensity in a safety-critical way.

Degree of recognition: International
Links:
https://link.springer.com/chapter/10.1007/978-3-319-60441-1_75

Related event
AHFE: International Conference on Applied Human Factors and Ergonomics
17/07/2017 → 21/07/2017
Los Angeles, California, United States
Activity: Talks and presentations › Conference presentations

Novice Drivers' Objective and Subjective Hazard Detection Skills: Potentially Hazardous Pedestrian Events in Typical Car-pedestrian Accident Locations in Denmark
Period: 21 Jul 2017
Liva Abele (Speaker)
Department of Management Engineering
Technology and Innovation Management
Transport DTU
Degree of recognition: International

Related event
AHFE: International Conference on Applied Human Factors and Ergonomics
17/07/2017 → 21/07/2017
Los Angeles, California, United States
Activity: Talks and presentations › Conference presentations

Tramp ship routing and scheduling with voyage separation requirements
Period: 17 Jul 2017
Jesper Larsen (Guest lecturer)
Charlotte Vilhelmsen (Other)
Richard Martin Lusby (Other)
Department of Management Engineering
Management Science
Transport DTU
Operations Research

Description
This presentation addresses a tramp routing and scheduling problem. Tramp ships operate like taxies by following the available demand, as opposed to liner ships that operate like busses on a fixed route network according to a published timetable. Tramp operators determine some of the demand in advance by ensuring long-term contracts. The rest of the demand comes from optional voyages found in the spot market. Routing and scheduling a tramp feet to best utilize feet capacity according to the current demand is therefore an ongoing and complicated problem. We add further complexity by incorporating voyage separation requirements that enforce a minimum time spread between some voyages. We developed a new and exact Branch-and-Price procedure for this problem. A dynamic programming algorithm generates columns, while a novel time window branching scheme is used to enforce the voyage separation requirements. Computational results show that the algorithm finds optimal solutions very quickly for the vast majority of test instances. We compare the results with two earlier published methods and show that our Branch-and-Price approach outperforms both an a priori path generation method and an Adaptive Large Neighbourhood Search heuristic.

Degree of recognition: International

Related event

IFORS 2017: 21st Conference of the International Federation of Operations and Research
17/07/2017 → 21/07/2017
Québec City, Canada
Activity: Talks and presentations › Conference presentations

Change or be changed: Resilience in socio-technical systems (Event)
Period: 4 Jul 2017
Anja Maier (External examiner)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

Description
University of Cambridge, Department of Engineering, Engineering Design Centre

Censor for PhD project

Body type: PhD Assessment Committee
Degree of recognition: International
Activity: Examinations and supervision › External examination

IAM 2017 Summer Conference
Period: 4 Jul 2017 → 7 Jul 2017
Evita Milana (Speaker)
Department of Management Engineering
Technology and Innovation Management

Description
Paper presentation

Related event

IAM 2017 Summer: International Conference on Innovation and Management
04/07/2017 → 07/07/2017
Activity: Talks and presentations › Conference presentations

Poster presentation
Period: 3 Jul 2017
Jacopo Tattini (Other)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
Improving the representation of modal choice into bottom-up optimization energy system models
Related event

03/07/2017 → 04/07/2017
London, United Kingdom
Activity: Talks and presentations › Conference presentations

Management Team Copenhagen Center for Health Technology (Event)
Period: 1 Jul 2017 → …
Anja Maier (Member)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

Description
Member Management Team for Copenhagen Center for Health Technology
Degree of recognition: International

Related event

Management Team Copenhagen Center for Health Technology
01/07/2017 → …
Copenhagen, Denmark
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

African Carbon Forum 2017
Period: 28 Jun 2017 → 30 Jun 2017
Susanne Konrad (Organizer)
Denis DR Desgain (Organizer)
Department of Management Engineering
UNEP DTU Partnership

Description
The 9th Africa Carbon Forum (ACF) will focus on how engagement between State and non-State actors can be further strengthened in the key sectors for Africa (energy, agriculture and human settlements), including the role of future carbon markets to achieve enhanced climate action, towards the goals of sustainable development
Degree of recognition: International

Related event

African Carbon Forum 2017: Collaborative climate action for sustainable development in Africa
28/06/2017 → 30/06/2017
Cotonou, Benin
Activity: Attending an event › Participating in or organising a conference

Integrating environmental impacts into cost-benefit analysis- The value of environmental pollutants
Period: 26 Jun 2017
Yan Dong (Speaker)
Stefano Manzo (Other)
Michael Zwicky Hauschild (Other)
Department of Management Engineering
Quantitative Sustainability Assessment
Transport DTU
Transport Modelling
Degree of recognition: International
Documents:
Abstract_Final version
Links:
http://programme.exordo.com/isie2017/delegates/presentation/13/

Related event
9th biennial conference of the International Society for Industrial Ecology (ISIE) and the 25th annual conference of the International Symposium on Sustainable Systems and Technology (ISSST)
25/06/2017 → 29/06/2017
Chicago, United States
Activity: Talks and presentations › Conference presentations

The industrial dynamics of water innovation: A comparison of China and Europe
Period: 26 Jun 2017
Mariú Abritta Moro (Speaker)
Department of Environmental Engineering
Water Technologies
Department of Management Engineering
Technology and Innovation Management
Degree of recognition: International

Related event
International Conference on Innovation Studies
26/06/2017 → 27/06/2017
Beijing, China
Activity: Talks and presentations › Conference presentations

Working in a broad partnership in the Kenya MiniWind project
Period: 26 Jun 2017
Ivan Nygaard (Invited speaker)
Department of Management Engineering
UNEP DTU Partnership
Degree of recognition: National
Documents:
DMDP meeting DTU 26.06.17 Ivan Nygaard final

Related event
Danida Market Development Partnership’s Information Meeting
26/06/2017 → 26/06/2017
Activity: Talks and presentations › Conference presentations

Integrating environmental impacts into cost-benefit analysis: The value of environmental pollutants
Period: 25 Jun 2017 → 29 Jun 2017
Yan Dong (Guest lecturer)
Stefano Manzo (Guest lecturer)
Michael Zwicky Hauschild (Guest lecturer)
Department of Management Engineering
Quantitative Sustainability Assessment
Transport DTU
**Description**

Sustainable Development Goals (SDGs) have raised the attention of the global society to apply environmental friendly solutions to solve problems. Cost Benefit Analysis (CBA) has been broadly used in different contexts and disciplines to facilitate decision makers in choosing among alternatives. CBA assumes that for each alternative there is a set of consequences, divided between costs and benefits that can be expressed in monetary terms. The preferred alternative is the one with the higher benefit cost ratio or Net Present Value (NPV). The considered consequences vary depending on the decision context. For example, the consequences that are covered in conventional transport projects include, among others, financial costs, travel time savings, variation in distance traveled, and the so called externalities, including number of accidents, noise impacts and some air pollutants (e.g. CO2, NOx, SOx, CO and HC from fuel consumption). With respect to the air pollutants, monetary values are provided by CBA guidelines for transport as well as for other disciplines. However, CBA overlooks the full life cycle of infrastructures and vehicles, and the full set of environmental impacts, due to the lack of methodology to quantify the comprehensive impacts and the lack of monetary values of those impacts.

Life Cycle Assessment (LCA) is a robust methodology that assesses environmental profiles of products and services throughout their whole life cycles. For a given solution to a decision problem, LCA can quantify environmental pollutants and resource consumptions that are associated with the physical elements in the solution (e.g. infrastructures and vehicles). Note that LCA provides an inventory that covers a comprehensive list of pollutants and resource consumptions, which can also be translated into damages on the protected area, namely ecosystem health, human health and resources availability, via life cycle impact assessment (LCIA). This gives possibilities of monetizing environmental impacts either on the inventory level, or on the damage level. Nevertheless, the monetizing values of different pollutants and resources should be consistent with the damages (and thus the monetizing values of the damages) that they may cause on the protected area.

This research aims to 1) investigate the monetary values of environmental pollutants in the chosen application disciplines; 2) understand if those values are consistent with the monetized damages calculated by LCA methods and; 3) compare CBA with and without LCA, considering the uncertainty, using a transport case study.

Our study shows that the monetized damages calculated by LCA methods lie within the range of values reviewed in transport and waste treatment studies. The variation of pollutant prices can vary up to 2-3 orders of magnitude depending on the chosen methodology. The results from the transport case study show that including the monetized LCA result in the traditional CBA doubles the NPV. This suggests that the price assigned to particularly CO2 can change the NPV dramatically, which can influence the decision when more options are available. In sum, integrating monetized LCA results into current CBA is a feasible way of including environmental impacts in decision making, increasing the environmental relevance of the decision support.

Degree of recognition: International

Links:

http://isie-issst2017.uic.edu/

**Related event**

**ISIE 2017: Science for Sustainable and Resilient Communities**

Period: 25/06/2017 → 29/06/2017
Chicago, United States
Activity: Talks and presentations › Conference presentations

**2nd International Conference on New Business Models**

Period: 21 Jun 2017 → 22 Jun 2017
Francesco Rosati (Speaker)

Department of Management Engineering
Technology and Innovation Management
Degree of recognition: International
Links:

https://new-business-models.uni-graz.at/en/

**Related event**

**2nd International Conference on New Business Models**

Period: 21/06/2017 → 22/06/2017
Graz, Austria
Activity: Talks and presentations › Conference presentations

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**Consumer's Attitude Towards Investments in Residential Energy Efficient Appliances: how End-user Choices Contribute to Change Future Energy Systems**
Period: 21 Jun 2017
Mattia Baldini (Speaker)
Alessio Trivella (Other)
Jordan William Halverson Wente (Other)
Department of Management Engineering
Systems Analysis
Management Science
Operations Research
Degree of recognition: International
Documents:
Mattia Baldini
Links:

Related event
The 40th IAEE International Conference: Meeting the Energy Demands of Emerging Economies - Implications for Energy and Environmental Markets
18/06/2017 → 21/06/2017
Singapore, Singapore
Activity: Talks and presentations › Conference presentations

GODSEM Project: Final Dissemination Workshop
Period: 16 Jun 2017
Francesco Rosati (Speaker)
Department of Management Engineering
Technology and Innovation Management

Related event
GODSEM Project: Final Dissemination Workshop
16/06/2017 → 16/06/2017
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Grid tariffs to support flexibility in decarbonised energy systems
Period: 16 Jun 2017
Claire Bergaentzlé (Speaker)
Department of Management Engineering
Systems Analysis
Energy Economics and Regulation
Degree of recognition: International
Documents:
Presentation FSR_grid_tariffs_120617

Related event
6th Florence Conference on the Regulation of Infrastructures: Regulatory challenges for smart cities
16/06/2017 → 16/06/2017
Florence, Italy
Activity: Talks and presentations › Conference presentations

MADE Danish Manufacturing Association Conference
Period: 15 Jun 2017
Daniel Alberto Sepúlveda Estay (Speaker)
Supply Chain Cyber resilience - The New Normal
Documents:
170515b_MADE_Final

MADE Danish Manufacturing Association Conference
15/06/2017 → 15/06/2017
Activity: Talks and presentations › Conference presentations

Value-Driven Risk Management - Supporting Systems Engineering Innovation
Period: 15 Jun 2017
Josef Oehmen (Keynote speaker)
Department of Management Engineering
Engineering Systems

Kongsberg Systems Engineering Event
15/06/2017 → 16/06/2017
Kongsberg, Norway
Activity: Talks and presentations › Conference presentations

Samfundsekonominke konsekvenser af trafiksikkerhed
Period: 14 Jun 2017
Kira Hyldekaer Janstrup (Invited speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Brancheforeningen Sikre Veje
Lautrupvej 2, 2750, Ballerup, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Trafiksikkerhed som grundlag for bedre prioritering af vejvedligehold
Period: 12 Jun 2017 → 13 Jun 2017
Kira Hyldekaer Janstrup (Invited speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Related event
12th International Conference on Occupational Stress and Health
Period: 9 Jun 2017
Christine Ipsen (Organizer)
Signe Poulsen (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
CREATING PROXIMITY ACROSS DISTANCES – MANAGEMENT TOOLS TO SUPPORT PERFORMANCE AND EMPLOYEE WELL-BEING

Degree of recognition: International

Related event
12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Minneapolis, United States
Activity: Attending an event › Participating in or organising a conference

12th International Conference on Occupational Stress and Health
Period: 9 Jun 2017
Christine Ipsen (Chairman)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Symposium: The role of managers in organizational interventions and non-interventions – at intra and inter-organizational work places
Degree of recognition: International

Related event
12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Minneapolis, United States
Activity: Attending an event › Participating in or organising a conference

Acting With Consideration for Level of Influence
Period: 9 Jun 2017
Christine Ipsen (Speaker)
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International
Documents:
Principle 8 Ipsen and Edwards

Related event
Creating proximity across distances – Management tools to support performance and employee well-being
Period: 9 Jun 2017
Christine Ipsen (Speaker)
Signe Poulsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related organisation
Creating proximity across distances – Management tools to support performance and employee well-being
Ipsen, C. (Speaker), Poulsen, S. (Speaker)
9 Jun 2017
Activity: Talks and presentations › Conference presentations

Developing communities of practice in health care
Period: 9 Jun 2017
Rasmus Jørgensen (Speaker)
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Documents:
Developing communities of practice in health care

Related event
IFKAD 2017: Knowledge Management in the 21st Century: Resilience, Creativity and Co-creation
07/06/2017 → 09/06/2017
Russian Federation
Activity: Talks and presentations › Conference presentations

PRINCIPLE 8. ACTING WITH CONSIDERATION FOR LEVEL OF INFLUENCE
Period: 9 Jun 2017
Kasper Edwards (Guest lecturer)
Christine Ipsen (Guest lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Presentation
Degree of recognition: International

Related event
12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Minneapolis, United States
Activity: Talks and presentations › Conference presentations
Ten Recommendations for the Design, Implementation and Evaluation of Improvements in Organizations
Period: 9 Jun 2017
Ulrica von Thiele Schwarz (Speaker)
Kasper Edwards (Speaker)
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event

12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Minneapolis, United States
Activity: Talks and presentations › Conference presentations

The Role of Managers in Organizational Interventions and Non-Interventions – At Intra and Inter-Organizational Work Places
Period: 9 Jun 2017
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Description
Presenting some key trends and discussions of the role of managers in interventions focusing on distance work and management

Related organisation

The Role of Managers in Organizational Interventions and Non-Interventions – At Intra and Inter-Organizational Work Places
Ipsen, C. (Speaker)
9 Jun 2017
Activity: Talks and presentations › Conference presentations

Can you design for Fidelity? How your intervention framework describes intended actions, participation and behavior
Period: 8 Jun 2017
Implementation of Preventive Interventions - What are the contextual co-players and opponents?
Period: 8 Jun 2017
Signe Poulsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event
12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Minneapolis, United States
Activity: Talks and presentations › Conference presentations

Integrating Work Environment Considerations Into Lean and Value Stream Mapping
Period: 8 Jun 2017
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event
12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Minneapolis, United States
Activity: Talks and presentations › Conference presentations

THE FISHBONE WORKSHOP: HOW TO TRANSFORM INITIAL PROBLEM IDENTIFICATION TO INTERVENTION INITIATIVES
Period: 8 Jun 2017
Christine Ipsen (Speaker)
Signe Poulsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event
Eurelectric - Florence School of Regulation
Period: 7 Jun 2017
Claire Bergaentzlé (Participant)
Energy Economics and Regulation
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
Agenda - The electricity market design of the future - 7 June

Related event
Eurelectric - Florence School of Regulation: What market design for a decarbonized electricity market?
07/06/2017 → 07/06/2017
Brussels, Belgium
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

FlexEm 2050 - Flexible Electricity Markets for Decarbonized Systems
Period: 7 Jun 2017
Klaus Skytte (Speaker)
Department of Management Engineering
Systems Analysis

Description
Conference: The electricity market design of the future
Euroelectric and Florence School of Regulation, Brussels
Degree of recognition: International
Documents:
FlexEm 2050_slides070617_a

Related event
The electricity market design of the future: Euroelectric and Florence School of Regulation
07/06/2017 → 07/06/2017
Brussels, Belgium
Activity: Talks and presentations › Conference presentations

WORK, STRESS and HEALTH
Period: 7 Jun 2017 → 10 Jun 2017
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
The 12th International Conference on Occupational Stress and Health
Links:
http://www.apa.org/wsh/preliminary-program.pdf (Conference program)

Related event
12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Flexibility-friendly support policies: A Nordic and Baltic Perspective
Period: 6 Jun 2017
Luis Rafael Boscán Flores (Speaker)
Department of Management Engineering

Description
Presentation slides
Degree of recognition: International
Documents:
Flexibility-friendly support policies

Related event
14th International Conference on the European Energy Market
06/06/2017 → 09/06/2017
Dresden, Germany
Activity: Talks and presentations › Conference presentations

FM innovation – Can touchpoints stand alone?
Period: 6 Jun 2017
Giulia Nardelli (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Presentation at Center for Facilities Management Research Forum
Degree of recognition: Local

Related organisation
FM innovation – Can touchpoints stand alone?
Nardelli, G. (Invited speaker)
6 Jun 2017
Activity: Talks and presentations › Conference presentations

Inclusive planning in transport and energy STI-policies
Period: 6 Jun 2017 → 9 Jun 2017
Per Dannemand Andersen (Speaker)
Meiken Hansen (Other)
Department of Management Engineering
Technology and Innovation Management

Description
Extended abstract
Degree of recognition: International
Documents:
Andersen Hansen Selin abstract

Related event
07/06/2017 → 09/06/2017
Vienna, Austria
Regulatory barriers for activating flexibility in the Nordic-Baltic electricity market

Period: 6 Jun 2017 → 9 Jun 2017
Claire Bergaentzlé (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
EEM17 - presentation - Regulatory barriers for activating flexibility in the Nordic-Baltic Conference proceeding-Regulatory barriers to flexibility in the nordic baltic electricity market - EEM17 (2)

Related event

International Conference on the European Energy Market
06/06/2017 → 09/06/2017
Dresden, Germany
Activity: Talks and presentations › Conference presentations

PhD Assessment Committee Aalborg University (External organisation)
Period: 2 Jun 2017
Ole Broberg (Participant)
Copenhagen Center for Health Technology
Department of Management Engineering
Engineering Systems

Description
Member of assessment committee for PhD thesis by Anne Helbo Jespersen "OHS management systems audits as a regulatory instrument of psychosocial risks - principles and practice"
Degree of recognition: International

Related external organisation

PhD Assessment Committee Aalborg University
Activity: Membership › Membership in review committee

Outsourcing seen in perspective of Industry 4.0
Period: 1 Jun 2017
Zaza Nadja Lee Herbert-Hansen (Speaker)
Department of Management Engineering
Management Science
Operations Management

Description
Presentation for DFK conference: "Hvordan Sikrer Du Kvalitet i Leverancer"
Degree of recognition: National

Related event

DFK Conference: Hvordan Sikrer Du Kvalitet i Leverancer
01/06/2017 → 01/06/2017
Denmark
Activity: Talks and presentations › Conference presentations

New process development in Open Innovation
Period: May 2017 → Oct 2017
Giulia Nardelli (Supervisor)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Special course (10 ECTS)
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

**Ambitiøse mål for trafiksikkerhed**
Period: 31 May 2017
Kira Hyldekær Janstrup (Speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

**Related event**
Transport Summer Summit DTU 2017: Challenges, research and new developments within transportation, mobility and sustainability
31/05/2017 → 31/05/2017
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

**Climate change mitigation potential of hydrochars**
Period: 31 May 2017
Mikolaj Owsianiak (Speaker)
Department of Management Engineering
Quantitative Sustainability Assessment

**Related event**
Climate change mitigation potential of hydrochars
31/05/2017 → 31/05/2017
Valencia, Spain
Activity: Talks and presentations › Conference presentations

**Creating Ideal Railway Traffic in a Multi-Modal Simulation Universe**
Period: 31 May 2017
Mads Paulsen (Speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

**Description**
Pecha Kucha presentation in the railway pitch session.
Degree of recognition: National
Documents:
CreatingIdealRailwayTrafficinAMultimodalSimulationUniverse

**Related event**
Transport Summer Summit DTU 2017: Challenges, research and new developments within transportation, mobility and sustainability
31/05/2017 → 31/05/2017
Lyngby, Denmark
Understanding railway delays
Period: 31 May 2017
Fabrizio Cerreto (Speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
Description of research results from the PhD project in IPTOP at DTU
Degree of recognition: Local
Links:
http://www.tilmeld.dk/summersummit2017/ (Conference homepage)

Related event
Transport Summer Summit DTU 2017: Challenges, research and new developments within transportation, mobility and sustainability
31/05/2017 → 31/05/2017
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Classification of electricity consumption using smart meter data
Period: 30 May 2017
Alexander Martin Tureczek (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
Electricity Smart Meter Consumption Analytics_orbit

Related event
CITIES consortium meeting 2017: Centre for IT–Intelligent Energy System in Cities
30/05/2017 → 31/05/2017
Aarhus, Denmark
Activity: Talks and presentations › Conference presentations

Structured Literature Review of Electricity Consumption Classification Using Smart Meter Data
Period: 30 May 2017 → 31 May 2017
Alexander Martin Tureczek (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
poster_cities_consortium_2017_århus

Related event
CITIES consortium meeting 2017: Centre for IT–Intelligent Energy System in Cities
30/05/2017 → 31/05/2017
Aarhus, Denmark
Activity: Talks and presentations › Conference presentations

Systems Engineering Risk Management
Period: 29 May 2017 → 2 Jun 2017
Josef Oehmen (Keynote speaker)  
Department of Management Engineering  
Engineering Systems  

Description  
Keynote speaker and co-organizer of IS3E 2017  
Degree of recognition: International  

Related event  
5th International Spring School on Systems Engineering  
29/05/2017 → 02/06/2017  
Enschede, Netherlands  
Activity: Talks and presentations › Conference presentations  

Praksisfællesskaber og procesensartethed  
Period: 28 May 2017  
Rasmus Jørgensen (Speaker)  
Department of Management Engineering  
Management Science  
Implementation and Performance Management  

Description  
Præsentation af min forskning samt invitation til muligt samarbejde  

Related external organisation  
Berendsen Textil Service A/S  
Denmark  
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations  

CFM workshop om FM værktøjer  
Period: 22 May 2017  
Giulia Nardelli (Participant)  
Department of Management Engineering  
Management Science  
Implementation and Performance Management  
Degree of recognition: Local  

Related event  
CFM workshop om FM værktøjer  
22/05/2017 → 30/08/2017  
Kgs. Lyngby, Denmark  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.  

DTU Project Risk Forum  
Period: 22 May 2017  
Josef Oehmen (Chairman)  
Pelle Lundquist Willumsen (Organizer)  
Department of Management Engineering  
Engineering Systems  

Description  
Industry-university event to discover and exchange best practice regarding engineering project risk management. Part of a Nordic 5 Tech Initiative.
Degree of recognition: National

Related event

DTU Project Risk Forum
Period: 22 May 2017
Lyngby, Denmark
Miroslava Tegeltija (Keynote speaker)
Department of Management Engineering

Description
Industry-university event to discover and exchange best practice regarding engineering project risk management. Part of a Nordic 5 Tech Initiative.
Degree of recognition: National

Related event

DTU Project Risk Forum
Period: 22 May 2017
Lyngby, Denmark
Anders Stockmarr (Speaker)
Department of Applied Mathematics and Computer Science
Statistics and Data Analysis
Department of Management Engineering

Description
Invited seminar talk
Degree of recognition: Local
Documents:
Intro R DTU Management Engineering
Intro R DTU Management Engineering

Related organisation

Introduction to R
Stockmarr, A. (Speaker)
22 May 2017
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Smart regulatory framework conditions for smart energy systems? Incentives for flexible district heating in the Nordic countries
Period: 19 May 2017
Daniel Møller Sneum (Guest lecturer)
Department of Management Engineering
Systems Analysis

Description
Analyses of the impact of taxes, subsidies and grid tariffs, on the investment in - and operation of - renewables-based district heating plants in the Nordic countries.
Degree of recognition: International
Documents:
Smart regulatory framework conditions for smart energy systems?

Related event

2nd HAEE INTERNATIONAL CONFERENCE : The landscape in the new era of energy transition: Challenges, investment opportunities and technological innovations
18/05/2017 → 20/05/2017
Athens, Greece
Activity: Talks and presentations › Conference presentations

A Method For Effect Modifier Assessment In Intervention Research – The EMA Method
Period: 18 May 2017
Kasper Edwards (Speaker)
Jørgen Winkel (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event

European Association of Work and Organizational Psychology: Enabling Change through Work and Organizational Psychology
17/05/2017 → 20/05/2017
Dublin, Ireland
Activity: Talks and presentations › Conference presentations

Assessing environmental impacts of future energy systems: A holistic LCA model for Europe in 2015-2050
Period: 18 May 2017
Serena Fabbri (Speaker)
Florence Alexia Bohnes (Other)
Department of Management Engineering
Quantitative Sustainability Assessment

Related event

Energy Modelling Platform for Europe (EMP-E) 2017
17/05/2017 → 18/05/2017
Brussels, Belgium
Activity: Talks and presentations › Conference presentations

Electricity Grid Tariffs To Increase The Flexibility Of Power-To-Heat In District Heating
Period: 18 May 2017 → 20 May 2017
Claire Bergaentzlé (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
Presentation HAEE

Related event

2nd HAEE INTERNATIONAL CONFERENCE : The landscape in the new era of energy transition: Challenges, investment opportunities and technological innovations
18/05/2017 → 20/05/2017
Athens, Greece
Energy Modelling Platform for Europe (EMP-E) 2017
Period: 18 May 2017
Alexis Laurent (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

**Description**
Assessing environmental impacts of future energy systems: A holistic LCA model for Europe in 2015-2050

**Related event**
Energy Modelling Platform for Europe (EMP-E) 2017
17/05/2017 → 18/05/2017
Brussels, Belgium
Activity: Attending an event › Participating in or organising a conference

European Association of Work and Organizational Psychology
Period: 18 May 2017 → 19 May 2017
Christine Ipsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Poster presentation and symposium participant/organizer

**Documents:**
EAWOP Poster (16.05.17)

**Related event**
European Association of Work and Organizational Psychology: Enabling Change through Work and Organizational Psychology
17/05/2017 → 20/05/2017
Dublin, Ireland
Activity: Attending an event › Participating in or organising a conference

A matheuristic approach for Integrated Timetabling and Vehicle Scheduling Problem
Period: 17 May 2017
Joao Filipe Paiva Fonseca (Speaker)
Roberto Roberti (Other)
Evelien van der Hurk (Other)
Allan Larsen (Guest lecturer)
Department of Management Engineering
Management Science
Operations Management
Operations Research
Degree of recognition: International

**Documents:**
Abstract_JoaoFonseca

**Related event**
Mini-Workshop on Integrated Timetabling
15/05/2017 → 17/05/2017
Nordic Systems Engineering Tour 2017  
Period: 17 May 2017  
Josef Oehmen (Organizer)  
Department of Management Engineering  
Engineering Systems  

Description  
Co-organizer  
Degree of recognition: International  

Related event  
Nordic Systems Engineering Tour 2017  
17/05/2017 → …  
Lyngby, Denmark  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Big Data Analysis in Railway Delays  
Period: 15 May 2017  
Fabrizio Cerreto (Speaker)  
Department of Management Engineering  
Transport DTU  
Transport Modelling  

Description  
Results from PhD research on railway delays using data analysis at DTU  
Degree of recognition: National  
Documents:  
BIG DATA ANALYSIS IN RAILWAY DELAYS - Fabrizio Cerreto  
Links:  
http://www.banekonference.dk/en (Conference homepage)  
http://www.banekonference.dk/sites/default/files/slides/12/1530_merged.pdf (Presentation slides on the conference homepage)  
http://www.banekonference.dk/en/program/2017 (Conference program)

Related event  
Danish Rail Conference 2017  
15/05/2017 → …  
Copenhagen, Denmark  
Activity: Talks and presentations › Conference presentations

Policy and planning related to climate change in developing countries  
Period: 11 May 2017  
Ivan Nygaard (Invited speaker)  
Department of Management Engineering  
UNEP DTU Partnership  

Description  
Presentation at the launch of DTU Renewable Energy Policy, Planning and Integration Advice Group (REPLI). Danish Technical University  
Degree of recognition: International  
Documents:  
DMDP meeting DTU 26.06.17 Ivan Nygaard final
Related event

**launch of DTU Launch of Renewable Energy Policy, Planning and Integration Advice Group (REPLI)**

11/05/2017 → 11/05/2017
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

**Applying LCA in decision making- the need and the future perspective**

Period: 10 May 2017
Yan Dong (Speaker)
Simona Miraglia (Other)
Stefano Manzo (Other)
Stylianos Georgiadis (Other)
Hjalte Jomo Danielsen Sørup (Other)
Elena Boriani (Other)
Tine Hald (Other)
Sebastian Thøns (Other)
Michael Zwicky Hauschild (Other)
Department of Management Engineering
Quantitative Sustainability Assessment
Centre for oil and gas – DTU
Transport DTU
Transport Modelling
Department of Applied Mathematics and Computer Science
Statistics and Data Analysis
Department of Environmental Engineering
Urban Water Systems
National Food Institute
Research Group for Genomic Epidemiology
Department of Civil Engineering
Section for Structural Engineering

Documents:
AbstrApplying LCA in policy decision making_Final
Links:
https://brussels.setac.org/welcome/

Related event

**SETAC Europe: 27th Annual Meeting – Environmental Quality Through Transdisciplinary Collaboration**

07/05/2017 → 13/07/2017
Brussels, Belgium
Activity: Talks and presentations › Conference presentations

**DTU OM Forum**

Period: 9 May 2017
Kasper Edwards (Organizer)
Rasmus Jørgensen (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Erfaringer med Lean Tavlemøder
Degree of recognition: National

Related event
DTU OM Forum: Erfaringer med Lean Tavlemøder
09/05/2017 → 09/05/2017
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Estimating soil emissions and toxicity impacts from the application of livestock manure: application to heavy metals at national scale
Period: 9 May 2017
Alexandra Segolene Corinne Leclerc (Speaker)
Department of Management Engineering
Quantitative Sustainability Assessment

Related event
SETAC Europe: 27th Annual Meeting – Environmental Quality Through Transdisciplinary Collaboration
07/05/2017 → 13/07/2017
Brussels, Belgium
Activity: Talks and presentations › Conference presentations

SETAC Europe: 27th Annual Meeting – Environmental Quality Through Transdisciplinary Collaboration
Period: 9 May 2017
Alexis Laurent (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Estimating soil emissions and toxicity impacts from the application of livestock manure: application to heavy metals at national scale

Related event
SETAC Europe: 27th Annual Meeting – Environmental Quality Through Transdisciplinary Collaboration
07/05/2017 → 13/07/2017
Brussels, Belgium
Activity: Attending an event › Participating in or organising a conference

Young drivers’ hazard detection
Period: 9 May 2017 → 10 May 2017
Liva Abele (Speaker)
Department of Management Engineering
Technology and Innovation Management
Transport DTU
Degree of recognition: International

Related event
The 6th Annual Scientific Seminar of the Nordic Traffic Safety Academy
09/05/2017 → …
Copenhagen, Denmark
**Globally-differentiated land use flow inventories for life cycle impact assessment**

Period: 8 May 2017  
Alexis Laurent (Speaker)  
Maria Faragò (Other)  
Lorenzo Benini (Other)  
Michela Secchi (Other)  
Serenella Sala (Other)  

Department of Management Engineering  
Quantitative Sustainability Assessment

**Related event**

**SETAC Europe: 27th Annual Meeting – Environmental Quality Through Transdisciplinary Collaboration**  
07/05/2017 → 13/07/2017  
Brussels, Belgium

**Position of existing footprints in the environmental sustainability landscape**

Period: 8 May 2017  
Alexis Laurent (Speaker)  

Department of Management Engineering  
Quantitative Sustainability Assessment  
Degree of recognition: International

**Related event**

**SETAC Europe: 27th Annual Meeting – Environmental Quality Through Transdisciplinary Collaboration**  
07/05/2017 → 13/07/2017  
Brussels, Belgium

**US-Danish Electricity Future Markets**

Period: 8 May 2017 → 9 May 2017  
Claire Bergaentzlé (Participant)  

Energy Economics and Regulation  
Department of Management Engineering
There is nowadays a need of including sustainable considerations in the policy and decision making. Sound decision making requires evidence-based support, i.e. decision analysis to help decision makers in identifying the best alternative based on the associated impacts. Decision analysis includes four steps: 1) structure decision problem; 2) assess possible impacts associated with alternatives; 3) determine stakeholder preferences and 4) evaluate alternatives. Decision analysis can be performed applying different tools, such as cost-benefit analysis (CBA), risk assessment, and life cycle assessment (LCA).

LCA is a decision analysis tool that focuses on environmental impacts. One limit is that LCA is based on defined impact categories and therefore does not provide information for those impacts and consequences out of the LCA scope. However, the LCA framework closely follows the decision analysis scheme and has the potential to be integrated with other decision analysis tools to enhance their assessment of environmental impacts.

To understand why LCA is needed in the policy decision context, we looked into the decision support for policy in several disciplines. Taking sustainable transport policy as an example, the traditional decision analysis tool for choosing the best alternative is CBA. CBA mainly analyses socio-economic impacts, such as travel time savings and costs, while only some environmental impacts are considered; i.e. the damage costs of greenhouse gas emissions, particulate matters, SOx, NOx and noise. Therefore, current transport policy making rarely reflect a full environmental profile of the suggested alternatives. Making decisions based on incomplete information may lead to sub-optimal solutions, especially where the environment is a major concern. There is a growing attention of conducting LCA in transport. Some identified environmental hotspots, such as consumer and household behavior, which may be the focus for future policies. Others assess the environmental impacts associated with building infrastructures and vehicle use. These studies verify that LCA
can successfully quantify the environmental profile of alternatives in transport policy, if the relevant physical changes, e.g. vehicle travel distance and new infrastructures, are well-defined. However, before integrating LCA with other decision analysis methods for decision support, the study system, objectives, scopes, evaluation metrics and uncertainty handling need to be aligned.

Degree of recognition: International

Links:
https://brussels.setac.org/

Related event

SETAC Europe: 27th Annual Meeting – Environmental Quality Through Transdisciplinary Collaboration
07/05/2017 → 13/07/2017
Brussels, Belgium
Activity: Talks and presentations › Conference presentations

An Engineering System Framework for Innovation of Complex Products and Systems
Period: 5 May 2017 → 8 May 2017
Zoran Perunovic (Guest lecturer)
Department of Management Engineering
DTU Executive School of Business

Related organisation

An Engineering System Framework for Innovation of Complex Products and Systems
Perunovic, Z. (Guest lecturer)
5 May 2017 → 8 May 2017
Activity: Talks and presentations › Conference presentations

EER - ELMA Seminar
Period: 5 May 2017 → …
Claire Bergaentzlé (Organizer)
Energy Economics and Regulation
Department of Management Engineering
Systems Analysis
Degree of recognition: Local

Related event

EER - ELMA Seminar: Energy Economics and Regulation - Energy Analytics & Markets
05/05/2017 → …
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Human factors and ergonomics in manufacturing and service industries (Journal)
Period: 5 May 2017 → 5 Jun 2017
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review of submitted paper.
Degree of recognition: International

Related journal

Human factors and ergonomics in manufacturing and service industries
Local database
Innovation through Risk Management: More Success by Failing Well  
Period: 5 May 2017  
Josef Oehmen (Keynote speaker)  
Department of Management Engineering  
Engineering Systems  

Description  
Invited talk at event “Failure in Innovation – is it the rule? Examples and strategies from industry and academic research”, organized by the German National Academy of Science and Engineering, Stuttgart  
Degree of recognition: International  

Related external organisation  
German National Academy of Science and Engineering - acatech  
Berlin, Germany  
Activity: Talks and presentations › Conference presentations

The Smart Sustainable City: Values, Visions, and Engagement  
Period: 5 May 2017  
Jay Sterling Gregg (Invited speaker)  
Department of Management Engineering  
Systems Analysis  

Description  
Presentation at UNEP  
Degree of recognition: Regional  
Related organisation  
The Smart Sustainable City: Values, Visions, and Engagement  
Gregg, J. S. (Invited speaker)  
5 May 2017  
Activity: Talks and presentations › Conference presentations

Closing the loop for aluminium cans: finding a framework to operationalize Circular Economy strategies  
Period: 28 Apr 2017  
Monia Niero (Invited speaker)  
Department of Management Engineering  
Quantitative Sustainability Assessment  

Description  
Round Table: The Transformative Approach applied to Raw Materials Engineering for a Sustainable World  
Degree of recognition: International  
Related event  
SDM'2017 International Conference on Sustainable Design and Manufacturing  
28/04/2017 → 28/04/2017  
Bologna, Italy  
Activity: Talks and presentations › Conference presentations

Forskningens døgn 2017 - Hvordan bygger og renoverer vi grønt?  
Period: 28 Apr 2017  
Jakob Brinke Berg (Speaker)
Related external organisation

Erhvervsakademi Sjælland
Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Aarhus University (External organisation)
Period: 27 Apr 2017
Per Dannemand Andersen (Chairman)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Description
Member of the assessment committee of the PhD thesis of Tymen Jissink. Department of Management, School of Business and Social Sciences, Aarhus University, Denmark.

Related external organisation

Aarhus University
Inge Lehmanns Gade 10, 8000, Aarhus C, Denmark
Activity: Membership › Membership in review committee

FM Innovations - Can touchpoints stand alone?
Period: 26 Apr 2017
Giulia Nardelli (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
In the FM industry, clients, customers and end users are crucial inspirators for innovators. But do FM innovators truly understand their customers’ "jobs", and not just their touchpoints throughout the day? And if they do, how do their integrate such understanding when driving and implementing innovation?
Degree of recognition: International

Related event

European Facilities Management Conference 2017
25/04/2017 → 28/04/2017
Madrid, Spain
Activity: Talks and presentations › Conference presentations

Forskningens døgn 2017 - Hvordan bygger og renoverer vi grønt?
Period: 24 Apr 2017
Jakob Brinke Berg (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: Regional
Links: http://forsk.dk/indbakke/hvordan-bygger-og-renovere-vi-gront

Related external organisation

Erhvervsakademi Sjælland
Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Forskningens døgn 2017 - Hvordan bygger og renovere vi grønt?
Period: 24 Apr 2017
Jakob Brinke Berg (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: Regional
Links: http://forsk.dk/indbakke/hvordan-bygger-og-renovere-vi-gront#cookieoptin

Related external organisation

Klima- og Energigruppen Stevns
Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Supervision of larger projects at DTU
Period: 24 Apr 2017
Giulia Nardelli (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Supervision of larger projects at DTU
Degree of recognition: Local

Related event

Supervision of larger projects at DTU
02/03/2010 → …
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Exposure group meeting - Walk21
Period: 18 Apr 2017
Kira Hyldekær Janstrup (Speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Related event

OECD - International Transport Forum: IRTAD - Meeting
18/04/2017 → 20/04/2017
Paris, France
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

**Human factors and ergonomics in manufacturing and service industries (Journal)**
Period: 18 Apr 2017 → …
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Member of the Editorial Board of Human Factors and Ergonomics in Manufacturing & Service Industries
Degree of recognition: International

**Related journal**
Human factors and ergonomics in manufacturing and service industries

**Related external organisation**
Transport Research Arena
Activity: Talks and presentations › Conference presentations

**Teaching Assistant for course 15.872 System Dynamics II**
Period: 15 Apr 2017 → 2 Jun 2017
Daniel Alberto Sepúlveda Estay (Guest lecturer)
Bradley Morrison (Lecturer)
Department of Management Engineering
Management Science
Transport DTU

**Description**
15.871 and 872 introduce you to system dynamics modeling for the analysis of business policy and strategy. You will learn to visualize a business organization in terms of the structures and policies that create dynamics and regulate performance. System dynamics allows us to create ‘microworlds,’ management flight simulators where space and time can be compressed, slowed, and stopped so we can experience the long-term side effects of decisions, systematically explore new strategies, and develop our understanding of complex systems. In these system dynamics courses we use simulation models, case studies, and management flight simulators to develop principles of policy design for successful management of complex strategies. Case studies of successful strategy design and implementation using system dynamics will be stressed. We consider the use of systems thinking to promote effective organizational learning. The principal purpose of modeling is to improve our understanding of the ways in which an organization’s performance is related to its internal structure and operating policies as well as those of customers, competitors, suppliers, and other stakeholders.

During the course students use several simulation models to explore such strategic issues as fluctuating sales, production and earnings; market growth and stagnation; the diffusion of new technologies; the use and reliability of forecasts; the rationality of business decision making; and applications in health care, energy policy, environmental sustainability, and other topics.
Students learn to recognize and deal with situations where policy interventions are likely to be delayed, diluted, or defeated by unanticipated reactions and side effects. You will have a chance to use state of the art software for computer simulation and gaming. Assignments give hands-on experience in developing and testing computer simulation models in diverse settings.

Degree of recognition: National
Documents:
Syllabus for course 15.872 System Dynamics II

Related event

15.872 System Dynamics II
15/04/2017 → 02/06/2017
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Systems Analysis (Organisational unit)
Period: 7 Apr 2017
Henrik Klinge Jacobsen (Chairman)
Department of Management Engineering
Systems Analysis

Description
Senior researcher assessment committee (chair)

Related organisation

Systems Analysis (Organisational unit)
Klinge Jacobsen, H. (Chairman)
7 Apr 2017
Activity: Membership › Membership in review committee

Facilities Management and Corporate Real Estate as Value Drivers
Period: 5 Apr 2017
Per Anker Jensen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Per Anker Jensen holdt indlæg om ny bog på Nordisk FM Dag i Malmö den 5. april 2017
Degree of recognition: International

Related event

Nordisk FM Dag
05/04/2017 → …
Malmö
Activity: Talks and presentations › Conference presentations

Improvements in organisations workshop
Period: 3 Apr 2017 → 4 Apr 2017
Signe Poulsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International

Related event
**Improvements in organisations workshop**  
03/04/2017 → 04/04/2017  
Sweden  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Joint FutureGas-CITIES-InnoSE Gas Workshop**  
Period: 3 Apr 2017  
Tara Sabbagh Amirkhizi (Speaker)  
Department of Management Engineering  
Systems Analysis  

**Description**  
Presentation

**Related organisation**  
**Joint FutureGas-CITIES-InnoSE Gas Workshop**  
Amirkhizi, T. S. (Speaker)  
3 Apr 2017  
Activity: Talks and presentations › Conference presentations

**International Journal of Workplace Health Management (Journal)**  
Period: 1 Apr 2017 → …  
Signe Poulsen (Reviewer)  
Department of Management Engineering  
Management Science  
Implementation and Performance Management  

**Related journal**  
**International Journal of Workplace Health Management**  
1753-8351  
Central database  
Activity: Research › Peer review of manuscripts

**The Deans Lecture Hall Technology Committee (Event)**  
Period: 1 Apr 2017 → …  
Christine Ipsen (Participant)  
Department of Management Engineering  
Management Science  
Implementation and Performance Management  

**Description**  
Member of DTUs Lecture Hall Technology committee

**Related event**  
**The Deans Lecture Hall Technology Committee**  
03/04/2017 → …  
Kgs. Lyngby, Denmark  
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**The Ph.D. Supervision Process: Methods and Tools**  
Period: Mar 2017 → May 2017  
Giulia Nardelli (Participant)
Department of Management Engineering

Management Science

Implementation and Performance Management
Degree of recognition: Local

Documents:
PhD supervision course-Diploma

Related event

The Ph.D. Supervision Process: Methods and Tools
07/03/2017 → 09/05/2017
Kgs. Lyngby, Denmark
Activity: Other

Electricity grid tariffs to support flexibility from district heating: The case of Denmark
Period: 31 Mar 2017
Claire Bergaentzlé (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: Local

Related event

ELMA - EER Common Seminar: ELMA (DTU Elektro) EER (DTU MAN)
31/03/2017 → 31/03/2017
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Intraday Market Asymmetries
Period: 31 Mar 2017
Emilie Rosenlund Soysal (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: Local
Documents:
Intraday Market Asymmetries PRESENTATION MARCH 2017

Related event

ELMA - EER Common Seminar: ELMA (DTU Elektro) EER (DTU MAN)
31/03/2017 → 31/03/2017
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Sammenhængen mellem vejenes tilstand, ulykker og samfundsøkonomi
Period: 30 Mar 2017
Kira Hyldekær Janstrup (Invited speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Related external organisation

Asfaltindustrien
Lautrupvej 2, 2750, Ballerup, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations
Low Carbon Economy Territory (ESPON - LOCATE) workshop
Period: 29 Mar 2017
Angreine Kewo (Speaker)
Per Sieverts Nielsen (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International

Related event

Low Carbon Economy Territory (ESPON - LOCATE) workshop
29/03/2017 → …
Vienna, Austria
Activity: Talks and presentations › Conference presentations

2017 STAMP Workshop
Period: 27 Mar 2017 → 30 Mar 2017
Daniel Alberto Sepúlveda Estay (Speaker)
Nancy Leveson (Speaker)
John Thomas (Lecturer)
Department of Management Engineering
Management Science
Transport DTU

Description
MIT STAMP/STPA Workshop took place during March 27-30, 2017.

STAMP is an accident causality model based on systems theory and systems thinking. STAMP integrates into engineering analysis the causal factors in our increasingly complex systems such as software, human-decision making and human factors, new technology, social and organizational design, and safety culture.

STPA is a powerful new hazard analysis technique based on STAMP while CAST is the equivalent for accident/incident analysis. These tools are now used globally in almost every industry. Newer tools, such of those for doing early concept analysis (STECA) security analysis (STPA-Sec) and leading indicators have been developed. This free workshop will provide attendees with the opportunity to learn how to use these new tools, to meet with users and to hear about applications, evaluations, and the latest developments in this powerful new approach to system safety engineering and to cyber security.

Degree of recognition: International
Documents:
170330_Workshop_presentation_Sepulveda

Related external organisation

Massachusetts Institute of Technology
Cambridge, United States
Activity: Talks and presentations › Conference presentations

Wind power in the future energy system
Period: 22 Mar 2017
Klaus Skytte (Speaker)
Department of Management Engineering
Systems Analysis

Description
AER Seminar 22nd March 2017, Comwell Campus Klarskovgaard, Korsør
Degree of recognition: National
Documents:
We investigate the problem of incentivising flexibility in electricity markets. As the share of intermittent renewable energy increases in the generation mix, power systems are exposed to greater levels of uncertainty and risk, which requires planners, policy and business decision makers to incentivise flexibility, that is: their adaptability to unforeseen variations in generation and demand. The greater need for flexibility, along with the fact that its provision is costly, highlights the importance of efficient procurement. As a commodity, flexibility has multiple attributes such as capacity, ramp rate, duration and lead time among which there are complementarities. Additionally, along with traditional sources, which already enable flexibility, a number of business models, such as thermostat-based demand response, aggregators and small storage providers, are emerging in electricity markets and expected to constitute important sources of flexibility in future decentralised power systems. However, due to presence of high transaction costs, relative to the size of resource, the emerging small resources cannot directly participate in an organised electricity market and/or compete. Therefore we ask the fundamental question of how should the provision of flexibility, as a multi-dimensional commodity, be incentivised in this context? We model the procurement of flexibility services from emerging small resources through bilateral contracts in a multidimensional adverse selection setting. We take a normative perspective and show how efficient contracts for flexibility services can be designed given its peculiarity as an economic commodity. Through a simulation analysis we elucidate the applicability of the proposed model and demonstrate the way it can be utilised, for example, a thermostat based demand response programme.

Degree of recognition: National
Documents:
Flexibility Enabling Contracts in Electricity Markets

Related event

Seminar at Department of Sociology, Environmental and Business Economics
21/03/2017 → …
Esbjerg, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities
Introduktion til Facilities Management
Period: 20 Mar 2017
Per Anker Jensen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: Regional

Related event

Temadag om Facilities Management
22/03/2017 → …
Fredericia
Activity: Talks and presentations › Conference presentations

Low Carbon, Smart and Sustainable Cities Workshop
Period: 20 Mar 2017
Subash Dhar (Organizer)
Department of Management Engineering
Transport DTU
UNEP DTU Partnership

Description
Smart Cities in India and the international policy context
Degree of recognition: National
Documents:
Subash Dhar SMART CITIES PPT 2017 Final

Related event

Low Carbon, Smart and Sustainable Cities Workshop
20/03/2017 → 20/03/2017
Delhi, India
Activity: Attending an event › Participating in or organising a conference

Webinar: Recovery of Operations from Cyberattacks - a structure for response
Period: 15 Mar 2017
Daniel Alberto Sepúlveda Estay (Speaker)
Department of Management Engineering
Management Science
Transport DTU

Description
Cyber attacks on supply chains are a constant threat to organizations. News media are regularly reporting cyber attacks to supply chains that result in data theft or denial of service. Examples abound, such as the theft of credit card data for 70 million customers from Target in 2013, and a sophisticated distributed attack that blocked the websites of major companies in the east-US such as Amazon, Starbucks and PayPal, during most the 21st of October 2016. Although relevant, this coverage often overshadows cyber-attacks that affect supply chain operations, which continue to occur without media attention. This is giving hackers free range to refine and practice their techniques for increased penetration and damage, resulting in a whole different range of disruptions such as container theft, intervention of plant operation, or misallocation of payments, for example. The MIT Center for Transportation & Logistics (CTL) will host a webinar to address hacker-related vulnerabilities in supply chain operations. At the root of this problem lies the structure of data exchanges between supply chain partners. Key questions for supply chain managers include: How does your supply chain manage these data exchanges? How much are you assigning these problems to IT even though they have direct impact on operations? How does your supply chain prevent these attacks, or react when these attacks happen? Is your supply chain merely relying on external insurance, or do you understand how these exchanges can be designed and controlled in cases of attack for improved recovery? Dr. Jim Rice and Daniel Sepulveda, PhD student, will address these questions, and talk about research findings that offer a deeper understanding of the structures that supply chains can use to improve
their response from hacker attacks so as to minimize operational disruption and allow a more efficient recovery.

Chairman: James Blanley Rice. Center for Transportation and Logistics at the Massachusetts Institute of Technology

Degree of recognition: International

Documents:
170315_Webinar_Daniel_Sepulveda
MIT-CTL-Webinar_registration_page

Links:
https://www.youtube.com/watch?v=zsmpjNRcfl (Cyber attacks on supply chains are a constant threat to organizations. News media are regularly reporting cyber attacks to supply chains that result in data theft or denial of service. Examples abound, such as the theft of credit card data for 70 million customers from Target in 2013, and a sophisticated distributed attack that blocked the websites of major companies in the east-US such as Amazon, Starbucks and PayPal, during most the 21st of October 2016. Although relevant, this coverage often overshadows cyber-attacks that affect supply chain operations, which continue to occur without media attention. This is giving hackers free range to refine and practice their techniques for increased penetration and damage, resulting in a whole different range of disruptions such as container theft, intervention of plant operation, or misallocation of payments, for example. The MIT Center for Transportation & Logistics (CTL) will host a webinar to address hacker-related vulnerabilities in supply chain operations. At the root of this problem lies the structure of data exchanges between supply chain partners. Key questions for supply chain managers include: How does your supply chain manage these data exchanges? How much are you assigning these problems to IT even though they have direct impact on operations? How does your supply chain prevent these attacks, or react when these attacks happen? Is your supply chain merely relying on external insurance, or do you understand how these exchanges can be designed and controlled in cases of attack for improved recovery? Dr. Jim Rice and Daniel Sepulveda, PhD student, will address these questions, and talk about research findings that offer a deeper understanding of the structures that supply chains can use to improve their response from hacker attacks so as to minimize operational disruption and allow a more efficient recovery.)

Related event

Webinar: Recovery of Operations from Cyberattacks - a structure for response
15/03/2017 → …
Cambridge, United States
Activity: Talks and presentations › Conference presentations

A DTU researcher's experiences
Period: 14 Mar 2017
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event

Introduction to DTU - Welcome seminar
14/03/2017 → 14/03/2017
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Annual Design Society Board of Management and Advisory Board Meeting (Event)
Period: 13 Mar 2017 → 17 Mar 2017
Anja Maier (Participant)
Copenhagen Center for Health Technology
Department of Management Engineering
Engineering Systems

Description
Annual Design Society Board of Management and Advisory Board Meeting
Degree of recognition: International
Related event

**Annual Design Society Board of Management and Advisory Board Meeting**
13/03/2017 → 17/03/2017
Montreal, Canada
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**Energy Research & Social Science (Journal)**
Period: 13 Mar 2017 → 30 Jun 2018
Robert Byrne (Editor)
Ulrich Elmer Hansen (Editor)
James Arthur Haselip (Editor)
Ivan Nygaard (Editor)
David Ockwell (Editor)
Department of Management Engineering
UNEP DTU Partnership

**Description**
Special Issue on uptake and diffusion of solar power in Africa
Degree of recognition: International
Links:
https://ean.hypotheses.org/112

**Related journal**
**Energy Research & Social Science**
2214-6296
BFI (2018): BFI-level 1, Scopus rating (2016): CiteScore 5.14 SJR 1.796 SNIP 1.967, ISI indexed (2013): ISI indexed no,
Web of Science (2018): Indexed yes
Central database
Activity: Research › Journal editor

**State of the art in Energy Informatics – opportunities and barriers**
Period: 6 Mar 2017
Alexander Martin Tureczek (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: Local
Documents:
Presentation Vejle 6_3_17 - Alex-Final

**Related event**
**Scale UP Denmark Camp**
06/03/2017 → 06/03/2017
Vejle, Denmark
Activity: Talks and presentations › Conference presentations

**35th International Conference on the System Dynamics Society (Event)**
Period: 1 Mar 2017 → 30 Apr 2017
Daniel Alberto Sepulveda Estay (Reviewer)
Department of Management Engineering
Management Science
Description
2017 marks the 60th anniversary of the founding of the field of System Dynamics. It is thus fitting that we hold the 60th anniversary conference in Cambridge, next to the MIT campus where Jay Forrester developed the field. Today, System Dynamics is used around the world, from K-12 classrooms through doctoral programs, in scholarly research across many disciplines, and in applications from organizational change to climate change, from medicine to management. We will celebrate the accomplishments of the past six decades and explore future directions by showcasing the best work in dynamic modeling being done today.

There will be plenary presentations showcasing important work in the field, along with parallel and poster sessions, making available the most current research, applications, and work in progress. There is a full day of skill-building workshops covering a range of topics from basic software use to advanced analysis techniques. In addition, there will be interest group sessions, student colloquia, the modeling assistance workshop, vendor displays, demonstrations, and more. The conference schedule will provide time for social and professional interaction.

The Society's annual international conference is held alternately in North America and Europe, with occasional appearances in Asia and the Pacific Rim. These conferences, and the meetings of local chapters and interest groups, introduce newcomers to the field, keep practitioners aware of current developments, and provide unparalleled networking opportunities.

Degree of recognition: International

Related event

35th International Conference on the System Dynamics Society
16/07/2017 → 20/07/2017
Cambridge, United States
Activity: Research › Peer review of manuscripts

PhD assessment (Candidate from Deakin University, Australia)
Period: 1 Mar 2017 → 28 Apr 2017
Christine Ipsen (External examiner)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Examiner
Degree of recognition: International
Activity: Examinations and supervision › Internal examination

World Sustainable Energy Days 2017
Period: 1 Mar 2017 → 3 Mar 2017
Aristeidis Tsakiris (Speaker)
Department of Management Engineering
UNEP DTU Partnership
Documents:
Conference Programme WSED 2017
Conference Review WSED17

Related event

World Sustainable Energy Days 2017: Young Researchers Conference: Energy Efficiency
28/02/2017 → 03/03/2017
Wels, Austria
Activity: Talks and presentations › Conference presentations

Social kapital netværksmøde 1 2017
Period: 24 Feb 2017
Kasper Edwards (Participant)
Department of Management Engineering
Mining historical delay data in railways
Period: 22 Feb 2017
Fabrizio Cerreto (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
Operating delays and network propagation are inherent characteristics of railway operations. Train detection systems collect large amounts of data in operation every day and recurring delay patterns can be spotted to improve the timetable design against delay propagation.

We propose multivariate statistic and computational data analysis tools to analyze railway delays from historical records. The trains paths are partitioned through different clustering methods to spot typical delay patterns, following the spatial profiles of absolute delays and changes in delay. The relations between the delay of the clusters and impacting factors, such as rolling stock compositions, time of the day, and of the year, are investigated and reported.

Data from Danish Railway is analyzed, and criticalities in data collection are highlighted. The tools presented can easily be transferred to other countries and other means of transport with sufficient data granularity.

Understanding the delay development and propagation on railway lines allows an improved allocation of time supplements, and results in smaller overall aggregate timetable supplement, reduced transport travel times, and higher productive utilization of train rolling stock. The study results will lead eventually to both better allocation of time supplements in timetable structures, and identification of areas that should be a high priority for correction.

Degree of recognition: International
Documents:
Mining historical delay data in railways - Presentation
Links:
https://for2083.math.uni-goettingen.de/en/project (FOR 2083 Project Description)
https://for2083.math.uni-goettingen.de/en/events/iptop (Event webpage)

Related event
FOR 2083 meets IPTOP
20/02/2017 → 22/02/2017
Stuttgart, Germany
Activity: Talks and presentations › Conference presentations

Norwegian University of Life Sciences
Period: 19 Feb 2017 → 10 Mar 2017
Daniel Møller Sneum (Visiting researcher)
Department of Management Engineering
Systems Analysis

Description
Research stay focused on collaboration on modelling of district energy systems and flexibility
Degree of recognition: International
Activity: Visiting an external institution › Visiting another research institution
Smart and connected urban playgrounds that promote creative development and endorse social encounters for liveable cities
Period: 16 Feb 2017 → 18 Jul 2017
Jay Sterling Gregg (Main supervisor)
Department of Management Engineering
Systems Analysis

Description
Master's Thesis
Júlia Camprubi i Vernis
S151103
Activity: Examinations and supervision › Supervisor activities

Combining Life Cycle Assessment and Environmental Life Cycle Costing to assess circularity strategies: the case of aluminium cans
Period: 15 Feb 2017
Monia Niero (Speaker)
Department of Management Engineering
Quantitative Sustainability Assessment
Degree of recognition: National

Related event
3rd Workshop "Life Cycle Thinking and Waste"
15/02/2017 → 15/02/2017
Milan, Italy
Activity: Talks and presentations › Conference presentations

Regulation and Policies on Electricity Markets
Period: 13 Feb 2017
Klaus Skytte (Speaker)
Department of Management Engineering
Systems Analysis

Description
Lecture 3 in "31761 - Renewables in Electricity Markets"
13 February 2017, DTU Elektro
Documents:
Lecture3_Regulation-policy-2017

Related organisation
Regulation and Policies on Electricity Markets
Skytte, K. (Speaker)
13 Feb 2017
Activity: Talks and presentations › Conference presentations

Introduktion til Facilities Management
Period: 7 Feb 2017
Per Anker Jensen (Guest lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
oPer Anker Jensen er sammen med Flemming Wulff Hansen, Datea med til at tilrettelægge og holde oplæg på temadage for medlemmer af Maskinmesterforeningen med henblik på etablering af netværk for FM
Første temadag afholdt den 7. februar i shoppingcenter RO i Roskilde, der administreres af DateaOK
Anden temadag afholdt den 22. marts på Fredericia Maskinmesterskole

Related event

**Temadag om Facilities Management**
07/02/2017 → ...
Roskilde
Activity: Talks and presentations › Conference presentations

City Logistics – constraints and opportunities. E-mobility and city logistics – for citizens, goods and business
Period: 2 Feb 2017
Allan Larsen (Guest lecturer)
Department of Management Engineering
Management Science
Transport DTU
Operations Management
Degree of recognition: National

Related event

**E-MOBILITY & CITY LOGISTICS - for citizens, goods, and business: Region Hovedstaden seminar om E-mobility**
02/02/2017 → ...
København, Denmark
Activity: Talks and presentations › Conference presentations

Modal Shift in transportation using the Multi-Nomial Logit function in System Dynamics simulation: A case study for Denmark
Period: 1 Feb 2017 → 30 Nov 2017
Jay Sterling Gregg (Main supervisor)
Mohammad Ahanchian (Supervisor)
Department of Management Engineering
Systems Analysis

Description
Master's Thesis
Georgios Nikou
s151061
Activity: Examinations and supervision › Supervisor activities

The Potential of Car Sharing to Disrupt the Transportation System in Denmark
Period: 1 Feb 2017 → 4 Jul 2017
Jay Sterling Gregg (Main supervisor)
Per Sieverts Nielsen (Supervisor)
Department of Management Engineering
Systems Analysis

Description
Master's Thesis
Elisa Johanna Lucia Teluij
S151266
Activity: Examinations and supervision › Supervisor activities

Global pesticide application scenarios for use in life cycle assessment and in chemical substitution
Period: Jan 2017 → Jul 2017
Peter Fantke (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

**Description**

Coordinator
Degree of recognition: National
Activity: Other

**ICED17: 21st International Conference on Engineering Design (Event)**
Period: Jan 2017 → Aug 2017
Ole Broberg (Participant)
Copenhagen Center for Health Technology
Department of Management Engineering
Engineering Systems

**Description**
Member of Scientific Committee
Degree of recognition: International

**Related event**

**ICED17: 21st International Conference on Engineering Design**
21/08/2017 → 25/08/2017
Vancouver, Canada
Activity: Membership › Membership in review committee

**Implementation and Performance Management (IPM) Research Seminar**
Period: Jan 2017
Giulia Nardelli (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: International
Links: https://www.youtube.com/channel/UCkeqpl0GiS63MiiBLBWrEFg (Youtube channel of the IPM Research Seminar)

**Related event**

**Implementation and Performance Management (IPM) Research Seminar**
26/01/2017 → …
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Venture Cup Denmark**
Period: 26 Jan 2017
Angreine Kewo (Participant)
Department of Management Engineering
Systems Analysis

**Description**
http://venturecup.dk/venture-cup-challenge-finalists/
Green Tech category: EnergyVision Team

**Related external organisation**

**Venture Cup Denmark**
Porcelænshaven 7, 2000, Copenhagen, Denmark
Activity: Other

2nd Workshop Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Copenhagen
Period: 24 Jan 2017
Anja Maier (Organizer)
Department of Management Engineering
Engineering Systems

Description
2nd Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Copenhagen

Related event

2nd Workshop Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Copenhagen
24/01/2017 → 24/01/2017
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Smart Meter Data Analyse- klassificering af elforbrugere, et review
Period: 24 Jan 2017
Alexander Martin Tureczek (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: National
Documents:
symposium_i_anvendt_statistik_2017_orbit

Related event

Symposium i Anvendt Statistik 2017
23/01/2017 → 24/01/2017
Odense, Denmark
Activity: Talks and presentations › Conference presentations

Meeting in Samsø
Period: 22 Jan 2017
Tara Sabbagh Amirkhizi (Speaker)
Systems Analysis

Related organisation

Meeting in Samsø
Amirkhizi, T. S. (Speaker)
22 Jan 2017
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Engineering Systems Design - International Research Seminar at DTU
Period: 12 Jan 2017
Josef Oehmen (Organizer)
Anja Maier (Organizer)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

Description
Engineering Systems Design - International Research Seminar at DTU

Filippo Salustri (Ryerson University, Canada): “Three Monsters in design research: defining, formalizing, and visualizing -
an overview of 3 very difficult problems that still task us" Despite tremendous headway in developing a robust science of
design, some aspects of “designing” remain beyond our grasp, especially insofar as those aspects overlap significantly
with non-engineering design disciplines. This talk will review some of Fil Salustri’s efforts to clarify three of these aspects.

Michael Kokkolaras (McGill, Canada): “Rigorous practical optimization for simulation-based engineering design”
Computational models have accelerated the engineering design optimization process. Simulation-related challenges have
been mostly addressed by heuristics-based methods. This talk presents alternatives that are supported by convergence
properties.

Georges Fadel (Clemson University, United States of America): “Evolving Designs using Affordances” The talk focusses
on the adaptation of the theory of “affordances” from the field of perceptual psychology to better capture the perceived
positive and negative interactions between the user and the artifact and use optimization to evolve designs.

Degree of recognition: International
Documents:
Research Seminar on Engineering Systems Design - Flyer
Links:
http://www.dtu.dk/english/service/calendar/2017/01/engineering-systems-design-international-research-
seminar?id=e364fe90-47c5-4d80-88fc-07f70d0c8b733

Related event

Engineering Systems Design - International Research Seminar at DTU
12/01/2017 → 12/01/2017
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Innovation System Foresight
Period: 12 Jan 2017
Per Dannemand Andersen (Speaker)
Technology and Innovation Management
Department of Management Engineering

Description
For several decades foresight has been a field of practice providing decision support for science, technology and
innovation (STI) policy. Only recently has foresight begun to emerge as an academic field with contributions and
contributors from many different traditional academic disciplines. The seminar will focus on the foundations of innovation
system foresight, the practical challenges related to conducting innovation system foresight, and its possible policy
implications. Professor Per Dannemand Andersen will draw on recent cases such as North Sea offshore wind services. He
will also explore the difficulties scholars face when striving to contribute to both the academic development of the field and
to STI policy practice.

CSTI Seminar Series IfM, Cambridge University

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Arbejdsmiljøforskningsfondens Årskonference 2017
Period: 11 Jan 2017
Signe Poulsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: National

Related event

Arbejdsmiljøforskningsfondens Årskonference 2017
11/01/2017 → 11/01/2017
Denmark
The commuting habit loop: The role of satisfying existence, relatedness, and growth needs in modal choice
Period: 10 Jan 2017
Jesper Bláfoss Ingvardsen (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event
TRB 2017: 96th Annual Meeting of the Transportation Research Board
08/01/2017 → 12/01/2017
Washington D.C., United States
Activity: Talks and presentations › Conference presentations

Applied Ergonomics (Journal)
Period: 9 Jan 2017 → 5 Feb 2017
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review of Manuscript

Related journal
Applied Ergonomics
0003-6870
BFI (2018): BFI-level 2, Scopus rating (2016): CiteScore 2.18 SJR 0.875 SNIP 1.662, ISI indexed (2013): ISI indexed yes,
Web of Science (2018): Indexed yes
Central database
Activity: Research › Peer review of manuscripts

Subcommity of ABJ10 Long Distance and intercity Travel Joint Subcommity
Period: 9 Jan 2017
Linda Christensen (Guest lecturer)
Transport DTU
Transport Modelling
Degree of recognition: International
Documents:
Long distance travel TRB subcommity - supplemented

Related external organisation
Transportation Research Board, TRB
United States
Activity: Talks and presentations › Conference presentations

Teaching Assistant for course 15.871 Introduction to System Dynamics
Period: 7 Jan 2017 → 15 Apr 2017
Daniel Alberto Sepúlveda Estay (Participant)
Department of Management Engineering
Management Science

Transport DTU

Description
15.871 and 872 introduce you to system dynamics modeling for the analysis of business policy and strategy. You will learn to visualize a business organization in terms of the structures and policies that create dynamics and regulate performance. System dynamics allows us to create ‘microworlds,’ management flight simulators where space and time can be compressed, slowed, and stopped so we can experience the long-term side effects of decisions, systematically explore new strategies, and develop our understanding of complex systems. In these system dynamics courses we use simulation models, case studies, and management flight simulators to develop principles of policy design for successful management of complex strategies. Case studies of successful strategy design and implementation using system dynamics will be stressed. We consider the use of systems thinking to promote effective organizational learning.

The principal purpose of modeling is to improve our understanding of the ways in which an organization’s performance is related to its internal structure and operating policies as well as those of customers, competitors, suppliers, and other stakeholders.

During the course students use several simulation models to explore such strategic issues as fluctuating sales, production and earnings; market growth and stagnation; the diffusion of new technologies; the use and reliability of forecasts; the rationality of business decision making; and applications in health care, energy policy, environmental sustainability, and other topics.

Students learn to recognize and deal with situations where policy interventions are likely to be delayed, diluted, or defeated by unanticipated reactions and side effects. You will have a chance to use state of the art software for computer simulation and gaming. Assignments give hands-on experience in developing and testing computer simulation models in diverse settings.

Degree of recognition: National
Documents:

Syllabus for course 15.871 Introduction to System Dynamics

Teaching Assistant for course 15.871 Introduction to System Dynamics
Period: 7 Jan 2017 → 15 Apr 2017
Daniel Alberto Sepúlveda Estay (Lecturer)
Bradley Morrison (Lecturer)

Department of Management Engineering
Management Science

Transport DTU

Description
15.871 and 872 introduce you to system dynamics modeling for the analysis of business policy and strategy. You will learn to visualize a business organization in terms of the structures and policies that create dynamics and regulate performance. System dynamics allows us to create ‘microworlds,’ management flight simulators where space and time can be compressed, slowed, and stopped so we can experience the long-term side effects of decisions, systematically explore new strategies, and develop our understanding of complex systems. In these system dynamics courses we use simulation models, case studies, and management flight simulators to develop principles of policy design for successful management of complex strategies. Case studies of successful strategy design and implementation using system dynamics will be stressed. We consider the use of systems thinking to promote effective organizational learning.

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Students learn to recognize and deal with situations where policy interventions are likely to be delayed, diluted, or defeated by unanticipated reactions and side effects. You will have a chance to use state of the art software for computer simulation and gaming. Assignments give hands-on experience in developing and testing computer simulation models in diverse settings.

Degree of recognition: National
Documents:
Syllabus for course 15.871 Introduction to System Dynamics

Related external organisation

Massachusetts Institute of Technology
Cambridge, United States
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Det Nationale Forskningscenter for Arbejdsmiljø (Publisher)
Period: 5 Jan 2017 → 15 Apr 2017
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Degree of recognition: National

Related Publisher

Det Nationale Forskningscenter for Arbejdsmiljø
Local database
Activity: Research › Peer review of manuscripts

Det Nationale Forskningscenter for Arbejdsmiljø (Publisher)
Period: 5 Jan 2017 → 15 Apr 2017
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review af rapport om Social kapital mellem teams
Degree of recognition: National

Related Publisher

Det Nationale Forskningscenter for Arbejdsmiljø
Local database
Activity: Research › Peer review of manuscripts

Det Nationale Forskningscenter for Arbejdsmiljø (Publisher)
Period: 5 Jan 2017 → 15 Apr 2017
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review af rapport om Forbindende social kapital
Degree of recognition: National

Related Publisher

Det Nationale Forskningscenter for Arbejdsmiljø
Local database
Activity: Research › Peer review of manuscripts
**BLOXHUB (External organisation)**
Period: 1 Jan 2017
Christian Thuesen (Member)
Department of Management Engineering

**Description**
BLOXHUB scientific advisory board

**Related external organisation**
BLOXHUB
Fæstningens Materialgård, Frederikholms Kanal 30, 1220, København V, Denmark
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

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**Den Bibliometriske Forskningsindikator: Faggruppe 45 - System- og teknologiudvikling, serviceudvikling og facilities management, entreprenørforskning (External organisation)**
Period: 1 Jan 2017 → 31 Dec 2019
Anja Maier (Participant)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

**Links:**
http://ufm.dk/forskning-og-innovation/statistik-og-analyser/den-bibliometriske-forskningsindikator

**Related external organisation**
Den Bibliometriske Forskningsindikator: Faggruppe 45 - System- og teknologiudvikling, serviceudvikling og facilities management, entreprenørforskning
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

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**Design Science Journal (Journal)**
Period: 1 Jan 2017 → …
Anja Maier (Editor)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

**Description**
Network-based modeling and analysis in design

Guest editors of thematic collection:
Wei Chen, Northwestern University, USA
Babak Heydari, Stevens Institute of Technology, USA
Anja Maier, Technical University of Denmark, Denmark
Jitesh Panchal, Purdue University, USA

Call for Papers: http://www.designsciencejournal.org/network-based-modeling-analysis-design/

Articles published/to be published in the collection: https://www.cambridge.org/core/journals/design-science/collections/network-based-modeling-and-analysis-in-design-special-collection
Degree of recognition: International

**Links:**

**Related journal**
Design Science Journal
11th ITEA Summer School. Universidad de Chile, Santiago
Period: 2016
Mogens Fosgerau (Lecturer)
Transport policy and behaviour
Department of Management Engineering

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

25th European Conference of Information Systems (Event)
Period: 2016 → 2017
Giulia Nardelli (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review of research papers
Degree of recognition: International

Related event

25th European Conference of Information Systems
05/06/2017 → 10/06/2017
Guimarães, Portugal
Activity: Research › Peer review of manuscripts

Assessment committee PhD student Kira Janstrup (External organisation)
Period: 2016
Mette Møller (Chairman)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Related external organisation

Assessment committee PhD student Kira Janstrup
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Behavioral Science (Journal)
Period: 2016 → …
Mette Møller (Reviewer)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Related journal
Behavioral Science
Local database
Activity: Research › Peer review of manuscripts

Cyklistssikkerhed
Period: 2016
Mette Møller (Organizer)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Description
Sessionsleder

Related event
Cyklistssikkerhed
23/08/2016 → 23/08/2016
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Daily Pattern Formulation and Valid Inequalities for the Curriculum-based Course Timetabling Problem
Period: 2016
Niels-Christian Fink Bagger (Guest lecturer)
Guy Desaulniers (Guest lecturer)
Jacques Desrosiers (Guest lecturer)
Department of Management Engineering
Management Science
Operations Research

Related event
11th International Conference on the Practice and Theory of Automated Timetabling
23/08/2016 → 26/08/2016
Italy
Activity: Talks and presentations › Conference presentations

EuroFM (External organisation)
Period: 2016 → …
Giulia Nardelli (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Jury member for the Partner for Innovation (P4I) Award, European Facilities Management Network
Degree of recognition: International
Links:
http://www.eurofm.org/index.php/eurofm-awards/partners-for-innovation-award (Partner for Innovation Award, EuroFM Network)

Related external organisation
EuroFM
Berlin, Netherlands
Activity: Membership › Membership in review committee
European Journal of Transport and Infrastructure Research (Journal)
Period: 2016 → …
Mette Møller (Reviewer)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Related journal
European Journal of Transport and Infrastructure Research

Local database
Activity: Research › Peer review of manuscripts

Human Factors and Ergonomics in Manufacturing (Journal)
Period: 2016 → …
Ole Broberg (Editor)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Human Factors and Ergonomics in Manufacturing & Service Industries
Associate Editor

Related journal
Human Factors and Ergonomics in Manufacturing
1090-8471
BFI (2018): BFI-level 2, Scopus rating (2016): CiteScore 1.13 SJR 0.344 SNIP 0.744, ISI indexed (2013): ISI indexed yes,
Web of Science (2018): Indexed yes
Central database
Activity: Research › Journal editor

IFRO Seminar Series 2016
Period: 2016
Catharina Wolff von Bülow (Invited speaker)
Department of Management Engineering
Systems Analysis
Links:
http://ifro.ku.dk/english/events/seminars/ifroseminars2016/be-seminar-13dec2016/

Related event
IFRO Seminar Series 2016: Behavioral Economics Seminar
13/12/2016 → …
Copenhagen, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

International Journal of Drug Policy (Journal)
Period: 2016 → …
Mette Møller (Reviewer)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Related journal

**International Journal of Drug Policy**
Local database
Activity: Research › Peer review of manuscripts

**International Journal of Sustainable Transportation (Journal)**
Period: 2016 → …
Mette Møller (Reviewer)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Related journal

**International Journal of Sustainable Transportation**
1556-8318
Central database
Activity: Research › Peer review of manuscripts

**Management Science (Journal)**
Period: 2016
Mogens Fosgerau (Reviewer)
Transport policy and behaviour
Department of Management Engineering

Related journal

**Management Science**
0025-1909
Central database
Activity: Research › Peer review of manuscripts

**Master thesis: Trængselsomkostninger i kollektiv trafik**
Period: 2016
Mogens Fosgerau (Supervisor)
Department of Management Engineering
Transport policy and behaviour
Activity: Examinations and supervision › External examination

**Norwegian Research Council, panel (External organisation)**
Period: 2016
Mogens Fosgerau (Participant)
Transport policy and behaviour
Department of Management Engineering
Degree of recognition: International

Related external organisation

**Norwegian Research Council, panel**
**Operations Research (Journal)**
Period: 2016
Mogens Fosgerau (Reviewer)
Transport policy and behaviour
Department of Management Engineering

**Related journal**
Operations Research
0030-364X
Central database

**Passageradfærd og sikkerhed på jernbanen**
Period: 2016
Mette Møller (Speaker)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

**Related event**
Passageradfærd og sikkerhed på jernbanen
03/11/2016 → 03/11/2016
Activity: Talks and presentations › Conference presentations

**Program committee RSS17 Road Safety & Simulation International conference (External organisation)**
Period: 2016 → 2017
Mette Møller (Participant)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

**Related external organisation**
Program committee RSS17 Road Safety & Simulation International conference

**Program committee Trafikdage (External organisation)**
Period: 2016 → 2018
Mette Møller (Participant)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

**Related external organisation**
Program committee Trafikdage
Research design
Period: 2016 → …
Giulia Nardelli (Guest lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Guest lecture in Research and Ph.D. studies at DTU MAN
Degree of recognition: Local

Related organisation
Research design
Nardelli, G. (Guest lecturer)
2016 → …
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

RSS17 Roads Safety & Simulation international conference (Journal)
Period: 2016 → 2017
Mette Møller (Reviewer)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Related journal
RSS17 Roads Safety & Simulation international conference
Local database
Activity: Research › Peer review of manuscripts

Safety (Journal)
Period: 2016 → …
Mette Møller (Reviewer)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Related journal
Safety
Local database
Activity: Research › Peer review of manuscripts

Period: 2016 → …
Mette Møller (Reviewer)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Related journal
Local database
**Technical Advisory Group (TAG) on Livestock Environmental Assessment and Performance (LEAP) Partnership (External organisation)**

**Period:** 2016

Nuno Miguel Dias Cosme (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

**Description**
The Partnership on Livestock Environmental Assessment and Performance (LEAP) is a multi-stakeholder initiative hosted and managed by the Food and Agriculture Organization of the United Nations (FAO). The goal of the Partnership is to improve the environmental performance of livestock supply chains through the development of robust international guidance and methodologies on environmental assessment.

Contributing to the Life Cycle Environmental Impact Assessment Technical Advisory Group (TAG)

**Degree of recognition:** International

**Related external organisation**

**Technical Advisory Group (TAG) on Livestock Environmental Assessment and Performance (LEAP) Partnership**
Activity: Membership › Membership of research networks or expert groups

**TrygFondens Unge-forskningsnetværk (External organisation)**

**Period:** 2016 → 2018

Mette Møller (Participant)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

**Related external organisation**

**TrygFondens Unge-forskningsnetværk**
Activity: Membership › Membership of research networks or expert groups

**Version2 Conference and Exhibition**

**Period:** 2016

Angreine Kewo (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

**Description**
Version2 Conference and Exhibition

**Related event**

**Version2 Conference and Exhibition**
03/05/2016 → 04/05/2016
København, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Visualizations for decisions in collaboration**

**Period:** 2016

Joana Geraldi (Speaker)
Department of Management Engineering
Engineering Systems

Description
Invited speaker on visualizations for decisions in collaboration with Dr Melanie Kreye

European Decision Professionals Network

Related event
European Decision Professionals Network
28/09/2016 → …
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Young Researchers Seminar 2017 (Event)
Period: 2016 → 2017
Mette Møller (Member)
Department of Management Engineering
Technology and Innovation Management
Transport DTU
Degree of recognition: International

Related event
Young Researchers Seminar 2017
16/05/2017 → 18/05/2017
Berlin, Germany
Activity: Membership › Membership in review committee

12th International Conference on Occupational Stress and Health (Event)
Period: 14 Dec 2016 → 22 Dec 2016
Signe Poulsen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review of conference abstracts

Related event
12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Minneapolis, United States
Activity: Research › Peer review of manuscripts

Finanforbundet University: Ledelse – den væsentligste faktor for en produktivitet og social kapital
Period: 14 Dec 2016
Kasper Edwards (Keynote speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations
**FM innovation and creativity**
Period: 14 Dec 2016
Giulia Nardelli (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Presentation at Center for Facilities Management Research Forum
Degree of recognition: Local

**Related organisation**

**The next big thing in project risk management**
Period: 14 Dec 2016
Josef Oehmen (Keynote speaker)
Department of Management Engineering
Engineering Systems

**Description**
Invited keynote talk at DTU-PMI industry event
Keynote talk on current research and industry developments on project risk management.

**Related event**

**World Energy Council - Denmark discussion**
Period: 8 Dec 2016
Angreine Kewo (Other)
Department of Management Engineering
Systems Analysis

**Description**
Presentation and discussion of Denmark ranked as world’s #1 in energy sustainability

**Related external organisation**

**PhD opponent Chalmers University of Technology (External organisation)**
Period: 6 Dec 2016
Ole Broberg (External examiner)
Copenhagen Center for Health Technology
Department of Management Engineering

Description
PhD opponent on the thesis by Steven Mallam "Distributed Participatory Design in Multidisciplinary Engineering Projects"
Degree of recognition: International
Activity: Examinations and supervision › External examination

30th Annual Conference on Neural Information Processing Systems
Period: 5 Dec 2016 → 10 Dec 2016
Filipe Rodrigues (Participant)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event
30th Annual Conference on Neural Information Processing Systems
05/12/2016 → 10/12/2016
Barcelona, Spain
Activity: Attending an event › Participating in or organising a conference

Who cares for the sustainability perspective?: - Deliberate efforts of holistic and long term thinking in Danish building processes
Period: 5 Dec 2016
Susanne Balslev Nielsen (Invited speaker)
Department of Management Engineering
Systems Analysis
Centre for Facilities Management
Documents:
05122016_whocares_NTNU_3_1

Related event
MINDER Research Seminar: Existing buildings: Day-to-day and long-term perspectives on realizing sustainability potentials in the built environment
05/12/2016 → 06/12/2016
Trondheim, Norway
Activity: Talks and presentations › Conference presentations

Who cares for the sustainability perspective?: Deliberate efforts of holistic and long term thinking in Danish building processes
Period: 5 Dec 2016
Helle Lohmann Rasmussen (Speaker)
Department of Management Engineering
Systems Analysis
Documents:
24112016_whocares_NTNU_3

Related event
MINDER Research Seminar: Existing buildings: Day-to-day and long-term perspectives on realizing sustainability potentials in the built environment
05/12/2016 → 06/12/2016
Trondheim, Norway
CREATES
Period: 4 Dec 2016
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering

Description
Seminar CREATES

Related event
CREATES
21/04/2016 → …
Aarhus, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

12th International Conference on Occupational Stress and Health (Event)
Period: 1 Dec 2016 → 22 Dec 2016
Christine Ipsen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Review of conference abstracts

Related event
12th International Conference on Occupational Stress and Health: Contemporary Challenges and Opportunities
07/06/2017 → 10/06/2017
Minneapolis, United States
Activity: Research › Peer review of manuscripts

Indicators, frameworks, and instruments to evaluate impacts and costs of chemicals in articles in the circular economy
Period: 1 Dec 2016 → 2 Dec 2016
Peter Fantke (Invited speaker)
Department of Management Engineering
Quantitative Sustainability Assessment
Documents:
Fantke_2016n.pdf

Related event
European Environment Agency (EEA) Expert Workshop on Groups of Chemicals in the Circular Economy
01/12/2016 → 02/12/2016
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Group & Organization Management (Journal)
Period: Nov 2016
Kasper Edwards (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Review of manuscript
Degree of recognition: International

**Related journal**

*Group & Organization Management*
1059-6011
Scopus rating (2016): CiteScore 1.94 SJR 0.889 SNIP 0.948, Web of Science (2018): Indexed yes
Local database
Activity: Research › Peer review of manuscripts

**4th scandinavian academy of Industrial Engineering and Management**
Period: 30 Nov 2016
Christine Ipsen (Organizer)
Pernilla Ulfvengren (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Human factors and sustainability

**Related event**

**4th scandinavian academy of Industrial Engineering and Management**
28/11/2016 → 30/11/2016
Luleå, Sweden
Activity: Attending an event › Participating in or organising a conference

**63rd LCA Discussion Forum**
Period: 30 Nov 2016
Monia Niero (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

**Description**
Oral presentation titled: "Challenges in LCA modelling of multiple loops for aluminium cans"
Documents:
Niero_LCA_DF_Zurich_2016 11 30
Links:
http://www.video.ethz.ch/events/lca/2016/autumn/63rd/29c3acf1-3fad-48de-be1c-e670fd341ccd.html

**Related event**

**63rd LCA Discussion Forum : How can LCA support the circular economy?**
30/11/2016 → 30/11/2016
Zürich, Switzerland
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Bias in academia**
Period: 29 Nov 2016
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event

4th scandinavian academy of Industrial Engineering and Management
28/11/2016 → 30/11/2016
Luleå, Sweden
Activity: Talks and presentations › Conference presentations

iea hia task 37
Period: 29 Nov 2016
Frank Markert (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Risk modelling of H2 supply chains including human aspects
Documents:
IEA HIA task37 presentation Bethesda meeting

Related event

iea hia task 37: hydrogen safety
Bethesda, United States
Activity: Talks and presentations › Conference presentations

Participatory Simulation in Hospital Work System Design (External organisation)
Period: 29 Nov 2016
Anja Maier (Chairman)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

Description
PhD thesis at Technical University of Denmark
PhD Assessment Committee
Body type: PhD Assessment Committee
Degree of recognition: International

Related external organisation

Participatory Simulation in Hospital Work System Design
Activity: Membership › Membership in review committee

4th scandinavian academy of Industrial Engineering and Management
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event
4th Scandinavian Academy of Industrial Engineering and Management
28/11/2016 → 30/11/2016
Luleå, Sweden
Activity: Talks and presentations › Conference presentations

**Description**
Participant, organizer and speaker

**Related event**
4th Scandinavian Academy of Industrial Engineering and Management
28/11/2016 → 30/11/2016
Luleå, Sweden
Activity: Talks and presentations › Conference presentations

**4th Scandinavian Academy of Industrial Engineering and Management**
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Christina Villefrance Møller (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Related event**
4th Scandinavian Academy of Industrial Engineering and Management
28/11/2016 → 30/11/2016
Luleå, Sweden
Activity: Attending an event › Participating in or organising a conference

**PhD workshop - reviewing IEM PhD projects** (Event)
Period: 28 Nov 2016
Christine Ipsen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
PhD workshop - reviewing PhD projects

**Related event**
PhD workshop - reviewing IEM PhD projects
Luleå, Sweden
Activity: Research › Peer review of manuscripts

**Offshore Wind in the Baltic Sea: Legal and Policy Perspectives on a Regional Meshed Grid**
Claire Bergaentzlé (Speaker)
Baltic InteGrid Project meeting

Documents:
Denmark – Transmission system and offshore wind connection

Offshore Wind in the Baltic Sea: Legal and Policy Perspectives on a Regional Meshed Grid
berlin, Germany
Activity: Talks and presentations › Conference presentations

International Conference of Low Carbon Asia
Subash Dhar (Speaker)
Department of Management Engineering
UNEP DTU Partnership

India's INDC for transport and the 2 degree C stablization target
Documents:
Transport INDC India

International Conference of Low Carbon Asia
Kuala Lumpur, Malaysia
Activity: Talks and presentations › Conference presentations

How can servant leadership be useful for Nordic leaders?
Period: 16 Nov 2016
Kasper Edwards (Other)
Department of Management Engineering
Management Science
Implementation and Performance Management

Nordic Colors of leadership
16/11/2016 → 16/11/2016
Reykavik, Iceland
Activity: Talks and presentations › Conference presentations

BarSOSU workshop i Aalborg: Udvikling af værktøj til strategisk arbejdsmiljøarbejde
Period: 14 Nov 2016
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Oplæg på BarSoSu workshop i Aalborg
EER Seminar
Period: 11 Nov 2016
Claire Bergaentzlé (Speaker)
Department of Management Engineering
Systems Analysis

Description
EER Seminars
Documents:
Regulatory barriers for activating flexibility on the Nordic-Baltic electricity market

Related event
EER Seminar
11/11/2016 → ...
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

IEA HIA Task 37 Hydrogen Safety
Period: 10 Nov 2016
Frank Markert (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Documents:
IEA HIA task37 poster_Odense_nov2016

Related event
Den danske brint- og brændselscelledag 2016
Odense, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Measuring and developing Communities of Practice in a blood analysis unit
Period: 10 Nov 2016 → 11 Nov 2016
Rasmus Jørgensen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Oral presentation of ph.d. research

Related event
NOVO symposium: Sustainable healthcare through professional collaboration across boundaries
Reykjavik, Iceland
Activity: Talks and presentations › Conference presentations
C2E2 seminar on energy efficiency for the student delegation from Utrecht
Period: 7 Nov 2016
Xianli Zhu (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentation on energy efficiency and sustainable lifestyle

Presentation to the delegation of around 30 master's degree students on energy from Utrecht University in the Netherlands
Documents:
Energy efficiency and sustainable lifestyle

Related event

C2E2 seminar on energy efficiency for the student delegation from Utrecht
07/11/2016 → 07/11/2016
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Indoor Chemistry Modeling in Context: What questions do we answer?
Period: 7 Nov 2016 → 8 Nov 2016
Peter Fantke (Lecturer)
Department of Management Engineering
Quantitative Sustainability Assessment

Related event

Workshop on Indoor Chemistry Models
07/11/2016 → 08/11/2016
Washington, United States
Activity: Talks and presentations › Conference presentations

EERA JP Energy Integration
Period: 2 Nov 2016
Angreine Kewo (Participant)
Department of Management Engineering

Related event

EERA JP Energy Integration
02/11/2016 → 04/11/2016
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Modelling tools for energy planning and energy system integration
Period: 2 Nov 2016
Sara Ben Amer-Allam (Invited speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Related event

EERA JP Energy Integration
02/11/2016 → 04/11/2016
Kgs. Lyngby, Denmark
Transforming Sustainability Challenges into New Business Model Opportunities
Period: 2 Nov 2016
Francesco Rosati (Speaker)
Department of Management Engineering
Technology and Innovation Management
Documents:
Workshop Invitation

Related event
Transforming Sustainability Challenges into New Business Model Opportunities
02/11/2016 → …
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

ICAT Transformational Change Guidance (Event)
Period: 1 Nov 2016
Karen Holm Olsen (Chairman)
Department of Management Engineering
UNEP DTU Partnership

Description
Development of guidance to assess transformational change potential and impacts of climate policies and actions

Related event
ICAT Transformational Change Guidance
01/11/2016 → …
Activity: Membership › Membership in review committee

Norges Forskningsråd (External organisation)
Period: 31 Oct 2016
Mogens Fosgerau (Participant)
Transport policy and behaviour
Department of Management Engineering

Description
Panel
Degree of recognition: International

Related external organisation
Norges Forskningsråd
Activity: Membership › Membership in review committee

Oplæg på DTU OM-Forum om ergonomisk værdistrømsanalyse
Period: 26 Oct 2016
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Oplæg på DTU OM-Forum
BarSOSU workshop i Odense: Udvikling af værktøj til strategisk arbejdsmiljøarbejde
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Description
Oplæg for BarSoSU i Odense

BarSOSU workshop i København: Udvikling af værktøj til strategisk arbejdsmiljøarbejde
Period: 21 Oct 2016
Kasper Edwards (Lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Description
Oplæg for BarSoSu i København

"Er de dårligst stillede selv ansvarlige for deres livsstilssygdomme?"
Period: 13 Oct 2016
Martin Marchman Andersen (Lecturer)
Department of Management Engineering
Technology and Innovation Management
Description
Foredrag givet på konferencen: Hvordan kommer vi den sociale ulighed i sundhed i kommunerne til livs? Arrangeret af Cowi
Documents:
Program konference LAKS (4)

Skriv effektivt
Period: 12 Oct 2016
Karen Holm Olsen (Participant)
Department of Management Engineering
Description

Informal urban settlements and modern energy conundrum: Experience from Africa, Asia and Latin America
Period: 10 Oct 2016
Emmanuel Ackom (Invited speaker)
Department of Management Engineering
UNEP DTU Partnership

Related event

Energy access, urbanization and international development
10/10/2016 → 10/10/2016
London, United Kingdom
Activity: Talks and presentations › Conference presentations

Oxford/DK Seminar
Period: 7 Oct 2016
Martin Marchman Andersen (Speaker)
Department of Management Engineering
Technology and Innovation Management

Related event

Oxford/DK Seminar
07/10/2016 → 08/10/2016
Oxford, United Kingdom
Activity: Talks and presentations › Conference presentations

Modelling production-consumption flows of goods in Europe: the trade model within Transtools 3
Period: 5 Oct 2016
Gerard de Jong (Speaker)
Reto Tanner (Other)
Jeppe Rich (Other)
Mikkel Thorhauge (Other)
Otto Anker Nielsen (Other)
John Bates (Other)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
Estimation results and elasticities are presented for the trade model within the European transport model Transtools3. We also explain how the outcomes of this model are used in the overall freight model.
Related event

European Transport Conference 2016
05/10/2016 → 05/10/2016
Barcelona, Spain
Activity: Talks and presentations › Conference presentations

The PhD roller coaster: Systems Biology PhD Introductory Course
Period: 5 Oct 2016
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related organisation

The PhD roller coaster: Systems Biology PhD Introductory Course
Ipsen, C. (Speaker)
5 Oct 2016
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Research proposal evaluation for Jonkoping University (External organisation)
Kasper Edwards (Member)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Evaluation and grading of research proposal for funding agency.
Degree of recognition: International

Related external organisation

Research proposal evaluation for Jonkoping University
Activity: Membership › Membership in review committee

XIIth International Symposium on Human Factors in Organizational Design and Management (ODAM) (External organisation)
Period: Sep 2016 → Aug 2017
Ole Broberg (Participant)
Copenhagen Center for Health Technology
Department of Management Engineering
Engineering Systems

Description
Member of Scientific Committee
Degree of recognition: International

Related external organisation

XIIth International Symposium on Human Factors in Organizational Design and Management (ODAM)
Activity: Membership › Membership in review committee
Framework conditions for flexibility options in the district heating–electricity interface: A comparative study of the district heating sectors in the Nordic and Baltic countries
Period: 28 Sep 2016
Daniel Møller Sneum (Lecturer)
Department of Management Engineering
Energy Economics and Regulation

Description
Presentation on the findings of the Flex4RES project's findings on energy system flexibility of the district heating systems in the Nordic and Baltic countries
Documents:
2016 Sneum - Framework conditions for flexibility options in the district heating–electricity interface

Related event
2nd International Conference on Smart Energy Systems and 4th Generation District Heating
27/09/2016 → 28/09/2016
Aalborg, Denmark
Activity: Talks and presentations › Conference presentations

Framework for sustainable development in NAMAs
Period: 28 Sep 2016
Karen Holm Olsen (Invited speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Training session
Documents:
Inter-active breakout session_28 Sep 2016_FINAL
Framework for SD in NAMAs

Related event
Low Emission Development Programme Latin American Regional Workshop: MOVING TOWARDS A RESILIENT AND LOW EMISSION DEVELOPMENT: IMPLEMENTING THE PARIS AGREEMENT
28/09/2016 → 29/10/2016
Panama City, Panama
Activity: Talks and presentations › Conference presentations

Modelling of low-carbon district heating: lessons learnt from a Danish and a Czech case
Period: 28 Sep 2016
Sara Ben Amer-Allam (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Related event
2nd International Conference on Smart Energy Systems and 4th Generation District Heating
27/09/2016 → 28/09/2016
Aalborg, Denmark
Activity: Talks and presentations › Conference presentations

Universities Forum: CIFMers and EuroFM
Period: 28 Sep 2016
Facilitated network activity

Presentation and speed dating facilitation

Documents:
Research Network Group_uni forum

Related event

**Congreso Internacional de Facility Managers: FM now and Everywere**
28/09/2016 → 30/09/2016
Madrid, Spain
Activity: Talks and presentations › Conference presentations

**Accelerating Energy Efficiency through Network Analysis**
Period: 27 Sep 2016
Xiao Wang (Invited speaker)
Department of Management Engineering
UNEP DTU Partnership

**Description**
"Accelerating Energy Efficiency through Network Analysis" - Xiao Wang introduced the audiences to the Global Energy Efficiency Accelerator Platform's partnership identification and mapping tool. This tool was developed in collaboration with the Net-Sights team to map the accelerators' vast network of committed jurisdictions, companies and partner organisations, helping to identify partners for collaborative energy efficiency projects and any gaps in the network that need strengthening.

The workshop aims to discover a completely new approach to explore collaboration partnerships in the context of real cleantech challenges. It is targeted at decision makers in the areas of R&D, Design, and Manufacturing with responsibilities that include innovation management, new product development and alliance formation.

Related event

**Net-Sights Workshop: Using data and network science to explore new collaboration opportunities in the Danish cleantech industry**
27/09/2016 → 27/09/2016
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

**Rejsetidsvariabilitet**
Period: 27 Sep 2016
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering

**Description**
Gå hjem møde, Transport og Bygningsministeriet

**Related external organisation**
**Unknown external organisation**
Activity: Talks and presentations › Conference presentations
Research priorities workshop on hydrogen safety
Period: 27 Sep 2016
Frank Markert (Chairman)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Research priorities workshop on hydrogen safety

Chairing the panel discussion on "General Aspects of Safety" a) Human behavior b) Training c) Mitigation including sensor

Related event
Research priorities workshop on hydrogen safety
26/09/2016 → 27/09/2016
Petten, Netherlands
Activity: Attending an event › Participating in or organising a conference

Smart Cities: Low Carbon Solutions
Period: 26 Sep 2016
Per Sieverts Nielsen (Lecturer)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities
Documents:
Smart Cities - Low carbon solutions -Singapore visit Sept2016 v2

Related event
Smart and sustainable cities: DTU-BCA Executive Development Programme 2016
26/09/2016 → 30/09/2016
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Sustainable Facilities Management - a way to smart city goals
Period: 26 Sep 2016
Susanne Balslev Nielsen (Lecturer)
Department of Management Engineering
Centre for Facilities Management
Systems Analysis
DTU Climate Centre

Description
Lecture at DTU_BCA Executive development program

Lecture at DTU_BCA Executive development program. Singapore deligation
Documents:
SBNI_SustainableFM_strategies_22092016

Related external organisation
Unknown external organisation
**Den Digitale Masterplan**

*Period:* 23 Sep 2016  
*Per Sieverts Nielsen (Participant)*  
*Department of Management Engineering*  
*Systems Analysis*  
*DTU Climate Centre*  
*Centre for IT-Intelligent Energy Systems in Cities*

**Description**

Den Digitale Masterplan

**Related event**

**Den Digitale Masterplan: Veje til en smart by**  
*23/09/2016 → 23/09/2016*  
*Egedal, Denmark*

**PhD faculty opponent at KTH / Royal Institute of Technology, Unit of Ergonomics (External organisation)**

*Period:* 23 Sep 2016  
*Kasper Edwards (External examiner)*  
*Department of Management Engineering*  
*Management Science*  
*Implementation and Performance Management*

**Description**

Official opponent at PhD defence

**Degree of recognition:** International

**Activity:** Examinations and supervision › External examination

**Medarbejderne fandt løsninger, mens ledelsen skabte rammer for forandring: En anderledes tilgang på Hjertecentret på RH**

*Period:* 22 Sep 2016  
*Kasper Edwards (Speaker)*  
*Department of Management Engineering*  
*Management Science*  
*Implementation and Performance Management*

**Description**

Oplæg på Arbejdsmiljøkonferencen, Region Syddanmark

**Related external organisation**

**Unknown external organisation**

**Activity:** Talks and presentations › Conference presentations

**Oplæg på RegionMidt Arbejdsmiljøkonference: Medarbejderne fandt løsninger, mens ledelsen skabte rammer for forandring – En anderledes tilgang på Hjertecentret på RH**

*Period:* 22 Sep 2016
Kasper Edwards (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event

Region Midt Arbejdsmiljøkonferencen 2016
22/09/2016 → 22/09/2016
Kolding, Denmark
Activity: Talks and presentations › Conference presentations

Designing Successful RES-E Auctions
Period: 21 Sep 2016
Emilie Rosenlund Soysal (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International

Related event

Experience Exchange on Designing RES E Auctions: AURES Workshop
21/09/2016 → …
Brussels, Belgium
Activity: Talks and presentations › Conference presentations

Mapping of design capacity in Denmark
Period: 21 Sep 2016
Ole Broberg (Participant)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

Description
Mapping of design capacity in Denmark

Related event

Mapping of design capacity in Denmark
21/09/2016 → 21/09/2016
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Fire Safety of Wind Turbines: Fire Scenarios
Period: 20 Sep 2016
Frank Markert (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
International workshop on Fire Safety of Wind Turbines
Documents:
Fire safety of wind turbines

Related external organisation
**Unknown external organisation**

**Activity: Talks and presentations › Conference presentations**

**1st Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Munich**

*Period: 19 Sep 2016 → 20 Sep 2016*

Anja Maier (Speaker)

*Engineering Systems*

*Department of Management Engineering*

*Copenhagen Center for Health Technology*

**Description**

*Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Munich*

**Related event**

**Engineering Systems Design & Data Science: EuroTech Alliance DTU-TUM Workshop in Munich**

*19/09/2016 → 20/09/2016*

*Munich, Germany*

**Activity: Talks and presentations › Conference presentations**

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**Massachusetts Institute of Technology**

*Period: 17 Sep 2016 → 2 Jun 2017*

Daniel Alberto Sepúlveda Estay (Visiting researcher)

*Department of Management Engineering*

*Management Science*

**Description**

*Visiting PhD Researcher: Cyber risk and Security in the Global Supply Chain*

*Visiting: Center for Transportation and Logistics at the Massachusetts Institute of Technology*

**Documents:**

MIT-CTL-Visiting PhD student webpage

MIT-CTL-Research_Page

**Links:**

http://ctl.mit.edu/about/bio/daniel-sepulveda-estay (Researcher profile page in the webpage of Center for Transport and Logistics at the Massachusetts Institute of Technology.)

http://ctl.mit.edu/mapping-supply-chain-response-cyber-attacks (Research Introduction webpage in the webpage of the Center for Transportation and Logistics at the Massachusetts Institute of Technology)

**Activity: Visiting an external institution › Visiting another research institution**

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**Bus and Passenger Simulation within a Combined Agent-Based Multi-Modal Assignment Model**

*Period: 16 Sep 2016*

Mads Paulsen (Speaker)

Thomas Kjær Rasmussen (Other)

Otto Anker Nielsen (Guest lecturer)

*Department of Management Engineering*

*Transport DTU*

*Transport Modelling*

**Degree of recognition: International**

**Related event**

**hEART 2016: 5th Symposium of the European Association for Research in Transportation**

*14/09/2016 → 16/09/2016*

*Delft, Netherlands*

**Activity: Talks and presentations › Conference presentations**
Mellem begejstring og belastning – årsager til og organisatorisk forebyggelse af stress
Period: 16 Sep 2016
Christine Ipsen (Invited speaker)
Signe Poulsen (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Workshop ved Afdelingsdag på Glostrup hospital

Related external organisation
Glostrup University Hospital
Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Skype seminar on best practices for energy efficiency improvement in Industry
Period: 16 Sep 2016
Xianli Zhu (Participant)
Department of Management Engineering
UNEP DTU Partnership

Description
This presentation was organised by the Belgian industrial association for the presentation from C2E2 based on our recent publication on best practices for energy efficiency improvement in industry

Skype Presentation to Industrial Representatives in Belgium on Energy Efficiency Improvement
Documents:
35-Xianli’s Skype Presentation on Best Practices for Industrial EE

Related event
Skype seminar on best practices for energy efficiency improvement in Industry
16/09/2016 → 16/09/2016
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

A model for freight transport chain choice in Europe
Period: 14 Sep 2016 → 16 Sep 2016
Anders Fjendbo Jensen (Speaker)
Mikkel Thorhauge (Other)
Gerard de Jong (Speaker)
Jeppe Rich (Other)
Thijs Dekker (Other)
Daniel Johnson (Other)
Manuel Ojeda Cabral (Other)
John Bates (Other)
Otto Anker Nielsen (Other)
Department of Management Engineering
Transport DTU
Transport Modelling

Description
This paper describes the structure of the Transtools3 freight transport chain choice model for Europe and the data at the shipment level that were used in estimation, and presents the estimation results and resulting elasticities. It also discusses
the structure of the overall freight model and how production-consumption matrices from a trade model are combined with
the transport chain choice model in model application. In the estimation of the transport chain choice model on the
available disaggregate data sources (the Swedish Commodity Flow Survey 2009 and the French ECHO survey) we tested
several options for the specification of transport costs in the model and various nesting structures.

**Related event**

**heart 2016**
14/09/2016 → 16/09/2016
Delft, Netherlands
Activity: Talks and presentations › Conference presentations

**Evaluation of satisfaction and knowledge propagation in public transport**

Period: 14 Sep 2016
Jesper Bláfoss Ingvarson (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

**Related event**

**hEART 2016: 5th Symposium of the European Association for Research in Transportation**
14/09/2016 → 16/09/2016
Delft, Netherlands
Activity: Talks and presentations › Conference presentations

**heart 2016**
Period: 14 Sep 2016 → 16 Sep 2016
Mogens Fosgerau (Speaker)
Transport policy and behaviour
Department of Management Engineering

**Related event**

**Synthesis of household based trip diaries**

Period: 14 Sep 2016
Mikkel Thorhauge (Speaker)
Jeppe Rich (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Documents:
Thorhauge - Trafikdage 2016 - Synthetic HH

**Related event**

**heart 2016**
14/09/2016 → 16/09/2016
Delft, Netherlands
The commuting habit loop: The role of satisfying existence, relatedness and growth needs in modal choice
Period: 14 Sep 2016
Jesper Bláfoss Ingvardson (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event
hEART 2016: 5th Symposium of the European Association for Research in Transportation
14/09/2016 → 16/09/2016
Delft, Netherlands
Activity: Talks and presentations › Conference presentations

District Energy Seminar for the Chinese High-level Delegation from NDRC and NECC
Period: 13 Sep 2016
Xianli Zhu (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentation on the UNEP District Energy Initiative Project, especially the contents of work in China

Presentation at State of Green during visit of NDRC and NECC official delegation from China
Documents:
Presentation to Chinese high-level delegation_13 Sept_final

Related event
District Energy Seminar for the Chinese High-level Delegation from NDRC and NECC
13/09/2016 → 13/09/2016
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Energy modelling with energyPRO - results and lessons learnt from progRESs HEAT project
Period: 13 Sep 2016
Sara Ben Amer-Allam (Invited speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Related event
Energy Cities’ District heating fact-finding mission to Denmark
13/09/2016 → …
Frederiksberg, Denmark
Activity: Talks and presentations › Conference presentations

Workshop on Public Transport Modelling and Analytics
Period: 13 Sep 2016
Mads Paulsen (Participant)
Department of Management Engineering
Transport DTU
Transport Modelling

**Related event**

**Workshop on Public Transport Modelling and Analytics**

13/09/2016 → 13/09/2016
Delft, Netherlands

Activity: Attending an event › Participating in or organising a conference

**Integrating EE into the 10YFP on Sustainable Consumption and Production Patterns**

*Period: 8 Sep 2016 → 9 Sep 2016*

Aristeidis Tsakiris (Organizer)

Department of Management Engineering

UNEP DTU Partnership

**Description**

In September 2016, the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) jointly with the Copenhagen Centre on Energy Efficiency (C2E2) held a workshop in Copenhagen, Denmark. This workshop had as objective to integrate energy efficiency into the six different 10YFP programmes. Energy efficiency is one of the most available and cost effective options for climate change mitigation. It contributes up to 50% of greenhouse gas reduction in current scenarios while delivering multiple co-benefits. It is also recognized as a key option for the sectors and themes covered by the 10YFP to contribute to the climate agenda.

**Documents:**

Integrating Energy Efficiency into the 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP)

**Links:**

http://www.energyefficiencycentre.org/Workshop-Presentations/Integrating-EE-into-the-10YFP-on-Sustainable-Consumption-and-Production-Patterns

**Related event**

**Integrating EE into the 10YFP on Sustainable Consumption and Production Patterns**

08/09/2016 → 09/09/2016
Copenhagen, Denmark

Activity: Attending an event › Participating in or organising a conference

**Scenarios for sustainable heat supply in cities - case of Helsingør, Denmark**

*Period: 7 Sep 2016*

Sara Ben Amer-Allam (Speaker)

Department of Management Engineering

Systems Analysis

DTU Climate Centre

**Related event**

**11th Conference on Sustainable Development of Energy, Water and Environment Systems**

04/09/2016 → 09/09/2016
Lisbon, Portugal

Activity: Talks and presentations › Conference presentations

**18th International Conference on Big Data Analytics and Knowledge Discovery (DaWaK 2016)**

*Period: 6 Sep 2016*

Xiufeng Liu (Participant)

Department of Management Engineering

Systems Analysis
Related event

18th International Conference on Big Data Analytics and Knowledge Discovery (DaWaK 2016)
05/09/2016 → 08/09/2016
Porto, Portugal
Activity: Attending an event › Participating in or organising a conference

Mitigation and MRV Partnership Annual Partnership Retreat
Period: 6 Sep 2016
Karen Holm Olsen (Participant)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentation of ICAT country support
Documents:
ICAT information on country support

Related event

Mitigation and MRV Partnership Annual Partnership Retreat: From MRV to an enhanced transparency framework in the context of NDC implementation
05/09/2016 → 07/09/2016
Cape Town, South Africa
Activity: Attending an event › Participating in or organising a conference

How is social capital linked to servant leadership in hospital settings?: Perception of social capital and servant leadership among Danish and Icelandic hospital staff
Period: 1 Sep 2016
Kasper Edwards (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event

3rd Global Servant Leadership Research Roundtable
01/09/2016 → 02/09/2016
Bifrost, Iceland
Activity: Talks and presentations › Conference presentations

CFM'S 2nd Nordic Conference
Period: 30 Aug 2016
Giulia Nardelli (Chairman)
Department of Management Engineering
Management Science
Implementation and Performance Management
Centre for Facilities Management

Description
Approaching aspects of value co-creation in relation to service innovation and FM

Participation and collaboration in organising the conference.

Related event
CFM’S 2nd Nordic Conference: Facilities Management Research and Practice
29/08/2016 → 30/08/2016
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Flex4RES Consortium meeting
Claire Bergaentzlé (Speaker)
Department of Management Engineering
Systems Analysis

Description
Flex4RES Consortium meeting
Documents:
Electricity report: Key findings

Related event
Flex4RES Consortium meeting
30/08/2016 → 31/08/2016
Ås, Norway
Activity: Talks and presentations › Conference presentations

Shared space og møde/konference faciliteter i Lyngby Vidensby
Period: 30 Aug 2016
Rikke Brinkø Berg (Speaker)
Department of Management Engineering
Systems Analysis

Related event

CFM Second Nordic Conference
29/08/2016 → 30/08/2016
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Bæredygtig ejendomsdrift med brug af sociale medier
Period: 29 Aug 2016
Helene Hjort Knudsen (Invited speaker)
Centre for Facilities Management
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Related event

CFM’S 2nd Nordic Conference: Facilities Management Research and Practice
29/08/2016 → 30/08/2016
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Projekt ledelse for forskere
Period: 29 Aug 2016 → 29 Nov 2016
Laila Marianne Martinussen (Participant)
Department of Management Engineering
Technology and Innovation Management

Related event

Projekt ledelse for forskere
29/08/2016 → 29/11/2016
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

ESEM
Period: 25 Aug 2016
Mogens Fosgerau (Speaker)
Transport policy and behaviour
Department of Management Engineering

Description
Econometric Society European Meeting

Related event

ESEM
22/08/2016 → 26/08/2016
Geneva, Switzerland
Activity: Talks and presentations › Conference presentations

Electric Boilers in District Heating Systems
Period: 24 Aug 2016
Emilie Rosenlund Soysal (Speaker)
Department of Management Engineering
Systems Analysis

Description
A Comparative Study of the Scandinavian market conditions
Degree of recognition: International
Links:
https://www.ltu.se/content/sae2016/Emilie%20Rosenlund%20Soysal%20-%20Presentation.pdf (Presentation slides)

Related event

Swedish Association for Energy Economics Conference 2016
23/08/2015 → 24/08/2016
Luleå, Sweden
Activity: Talks and presentations › Conference presentations

Methods for evaluation of regulation affecting flexibility in energy systems: A review of the literature
Period: 24 Aug 2016
Daniel Møller Sneum (Lecturer)
Department of Management Engineering
Energy Economics and Regulation

Description
Preliminary findings from the literature review of methods of regulation for flexibility in energy systems
Documents:
Preliminary literature review on methods for flexibility regulation

Related event

Swedish Association for Energy Economics Conference 2016
23/08/2015 → 24/08/2016
Luleå, Sweden
Activity: Talks and presentations › Conference presentations

Udvikling af transportvanedata for husholdninger
Period: 23 Aug 2016
Mikkel Thorhauge (Speaker)
Jeppe Rich (Other)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: National
Documents:
Thorhauge - Trafikdage 2016 - Synthetic HH

Related event
Trafikdage 2016
22/08/2016 – 23/08/2016
Ålborg, Denmark
Activity: Talks and presentations › Conference presentations

Hvad sker der med cykeltrafikken ?
Period: 22 Aug 2016
Hjalmar Christiansen (Invited speaker)
Data- and Modelcenter
Department of Management Engineering
Documents:
CykeludvTrafikdage

Related event
Trafikdage 2016
22/08/2016 – 23/08/2016
Ålborg, Denmark
Activity: Talks and presentations › Conference presentations

Litteraturstudie af effekterne af BRT, letbaner og metro
Period: 22 Aug 2016
Jesper Bláfoss Ingvardson (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: National

Related event
Trafikdage 2016
22/08/2016 – 23/08/2016
Ålborg, Denmark
Activity: Talks and presentations › Conference presentations

Øresundundersøgelsen 2015
Period: 22 Aug 2016
Hjalmar Christiansen (Lecturer)
Data- and Modelcenter
Selvkørende biler trafikantadfærd
Period: 22 Aug 2016
Mette Møller (Speaker)
Department of Management Engineering
Technology and Innovation Management
Transport DTU

Description
Selvkørende biler

Related event
Selvkørende biler trafikantadfærd
22/08/2016 → 22/08/2016
Activity: Talks and presentations › Conference presentations

Smart Cities: Low Carbon Solutions
Period: 16 Aug 2016
Per Sieverts Nielsen (Lecturer)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities
Documents:
Smart Cities - Low carbon solutions DTU Byg August2016 v2

Related event
Urban Challenge Summer school: Hamburg-Copenhagen
08/08/2016 → 19/08/2016
Hamburg and Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Reviewer for the Swedish Research Council FORMAS (External organisation)
Period: 1 Aug 2016 → 15 Sep 2016
Ivan Nygaard (Member)
Department of Management Engineering
UNEP DTU Partnership

Description
Member of evaluation panel for the Swedish Research Council for development research. Call on resilience and sustainability
Degree of recognition: International

Related external organisation
Reviewer for the Swedish Research Council FORMAS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

22nd international sustainable development research society conference
Francesco Rosati (Speaker)
Department of Management Engineering
Technology and Innovation Management
Degree of recognition: International

Related event

22nd international sustainable development research society conference
13/07/2016 → 15/07/2016
Lisboa, Portugal
Activity: Talks and presentations › Conference presentations

Roadmap to Nationally Appropriate Mitigation Actions in the Livestock Sector of Nicaragua - Multi Criteria Analysis with local and national stakeholders
FEDERICO ANTONIO CANU (Organizer)
Department of Management Engineering
UNEP DTU Partnership

Description
Roadmap to Nationally Appropriate Mitigation Actions in the Livestock Sector of Nicaragua - Multi Criteria Analysis with local and national stakeholders

Related event

Roadmap to Nationally Appropriate Mitigation Actions in the Livestock Sector of Nicaragua - Multi Criteria Analysis with local and national stakeholders
11/07/2016 → 13/07/2016
Nicaragua
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Who are the water innovators?
Period: 7 Jul 2016
Mariú Abritta Moro (Speaker)
Department of Environmental Engineering
Water Technologies
Department of Management Engineering
Technology and Innovation Management
Degree of recognition: International

Related event

16th International Schumpeter Society Conference
06/07/2016 → 08/07/2016
Montreal, Canada
Activity: Talks and presentations › Conference presentations

28th European Conference on Operational Research
Period: 5 Jul 2016
Amalia Rosa Pizarro Alonso (Speaker)
Department of Management Engineering
Description
Which is the optimal role that biomass and waste could play in a future energy system? - Linkage of biomass and waste supply models with energy models

28th European Conference on Operational Research
Documents:
What is the role of biomass and waste in future energy systems

Related event
28th European Conference on Operational Research
03/07/2016 → 07/07/2016
Poznan, Poland
Activity: Talks and presentations › Conference presentations

Planning of Midwives
Period: 4 Jul 2016
Charlotte Vilhelmsen (Speaker)
Jesper Larsen (Other)
Department of Management Engineering
Management Science
Operations Research

Description
At a hospital in Denmark around 40 midwives support the pregnancy of approx. 6000 pregnant women every year. Their role is to monitor the pregnancies and prepare the women for labour. Based on the due date of a woman, authority guidelines prescribe specific and mostly rather narrow time windows within which the pregnant woman should have consultations with a midwife. Therefore, once a pregnant woman enters the system, here sequence of consultations for the time period until labour is fairly fixed. There is a clear goal that, as far as possible, each pregnant woman should see the same midwife at every consultation. Every week the newly arrived pregnant women are assigned an arbitrary free time slot belonging to a specific midwife. In turn this midwife is expected to have consultations with this woman in specific weeks according to the authority guidelines. This random assignment of pregnant woman to specific midwives, without any concern to the midwives' future schedules, means that each midwife has a very unbalanced workload over the year. Furthermore, it means that there is an imbalance between the workloads of the different midwives. The aim of this project is therefore to devise a method that can make a fair distribution of pregnant women among the midwives. The distribution should result in a balanced work load for each midwife and a balanced work load among the midwives while at the same time making sure that the time windows for consultations are not violated.
Degree of recognition: International

Related event
28th European Conference on Operational Research
03/07/2016 → 07/07/2016
Poznan, Poland
Activity: Talks and presentations › Conference presentations

wholeSEM Annual Conference
Giada Venturini (Participant)
Department of Management Engineering

Description
Poster presentation
Documents:
Poster_wholeSEM_GiadaVenturini

Related event
wholeSEM Annual Conference
04/07/2016 → 05/07/2016
United Kingdom
Optimization of Medical Bed Resources using Queueing Theory and Hill Climbing
Period: 3 Jul 2016 → 6 Jul 2016
Anders Reenberg Andersen (Guest lecturer)
Department of Management Engineering
Management Science
Operations Research
Degree of recognition: International

Related event
28th European Conference on Operational Research
03/07/2016 → 07/07/2016
Poznan, Poland
Activity: Talks and presentations › Conference presentations

R&D Management Conference
Period: 3 Jul 2016 → 6 Jul 2016
Evita Milana (Speaker)
Department of Management Engineering
Technology and Innovation Management

Description
From Society to Innovation

Related external organisation
University of Cambridge
United Kingdom
Activity: Talks and presentations › Conference presentations

PhD Colloquium and Conference
Evita Milana (Participant)
Department of Management Engineering
Technology and Innovation Management

Description
Pre-conference PhD Colloquium 2016
R&D Management Conference 2016

Related event
PhD Colloquium and Conference: From Science to Society: Innovation and Value Creation
02/07/2016 → 06/07/2016
Cambridge, United Kingdom
Activity: Attending an event › Participating in or organising a conference

1st Conference of the EURO Working Group on Sustainable Supply Chains
Period: 1 Jul 2016 → 2 Jul 2016
Ida Græsted Jensen (Participant)
Department of Management Engineering
Energy Economics and Regulation
Related event

**1st Conference of the EURO Working Group on Sustainable Supply Chains**

01/07/2016 → 02/07/2016

Germany

Activity: Attending an event › Participating in or organising a conference

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**African Carbon Forum 2016**

Period: 30 Jun 2016

Xianli Zhu (Organizer)

Department of Management Engineering

UNEP DTU Partnership

**Description**

I attended the event on behalf of the Copenhagen Centre on Energy Efficiency and organised and hosted a side event on energy efficiency opportunities and initiatives in Africa.

Organising a side event on Energy Efficiency Opportunities and Initiatives in Africa during the African Carbon Forum 2016

**Documents:**

- C2E2 presentation during African Carbon Forum 2016_30 June

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**Related event**

**Integrating the Assessment of Sustainable Development in INDCs**

Period: 29 Jun 2016

Karen Holm Olsen (Invited speaker)

Department of Management Engineering

UNEP DTU Partnership

**Description**

Facilitator of training session

**Documents:**

- SD in INDCs_27-30June2016

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**Related event**

**Africa Carbon Forum: Promoting Cooperative Climate Action in Africa**

28/06/2016 → 30/06/2016

Kigali, Rwanda

Activity: Attending an event › Participating in or organising a conference

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**EURO PhD School on Sustainable Supply Chains**

Period: 26 Jun 2016 → 02 Jul 2016

Ida Græsted Jensen (Participant)

Department of Management Engineering

Energy Economics and Regulation

**Related event**

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**EURO PhD School on Sustainable Supply Chains**

26/06/2016 → 02/07/2016

Germany

Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
Generalforsamling i Dansk Byplanlaboratorium
Period: 22 Jun 2016
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Generalforsamling Dansk Byplanlaboratorium

Related event

Generalforsamling i Dansk Byplanlaboratorium 2016
22/06/2016 → 22/06/2016
København, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Net-Sights: Data-driven network insights @ Big Data Business Academy
Period: 21 Jun 2016
Anja Maier (Invited speaker)
Engineering Systems
Department of Management Engineering
Copenhagen Center for Health Technology
Links:
http://www.netsights.dk

Related event

Big Data Business Academy Kick-Off
21/06/2016 → 21/06/2016
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Gordon Research Conference - Industrial Ecology
Benjamin Paul Goldstein (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Poster presentation

Related event

Gordon Research Conference - Industrial Ecology: Opportunities for the Critical Decade – Decoupling Well-Being from Environmental Pressures and Impacts
19/06/2016 → 24/06/2016
Stowe, United States
Activity: Attending an event › Participating in or organising a conference

ITEA Conference
Period: 16 Jun 2016
Mogens Fosgerau (Speaker)
Transport policy and behaviour
Department of Management Engineering

Related event

11th ITEA Summer School
13/06/2016 → 15/06/2016
Santiago, Chile
Activity: Talks and presentations › Conference presentations

Nordic Fire & Safety Days
Frank Markert (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Nordic Fire & Safety Days member of scientific committee and consortium

Related event

Nordic Fire & Safety Days
16/06/2016 → 17/06/2016
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference

DIIS Seminar, Improving Energy Efficiency in Emerging Asia
Period: 14 Jun 2016
Subash Dhar (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Energy Efficiency trends in India

DIIS Seminar, Improving Energy Efficiency in Emerging Asia, June 14, 2016, Copenhagen
Documents:
Presentation India

Related event

DIIS Seminar, Improving Energy Efficiency in Emerging Asia
14/06/2016 → 14/06/2016
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Improving Energy Efficiency in Emerging Asia
Period: 14 Jun 2016
Xianli Zhu (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentation on energy efficiency in China

Organising and presentation at the C2E2 and DIIS joint seminar
Documents:
32-EE status quo and future in China
Related event

**Improving Energy Efficiency in Emerging Asia: DIIS, Danish Institute for International Studies in collaboration with the Copenhagen Centre on Energy Efficiency (C2E2)**
14/06/2016 → 14/11/2016
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

**ITEA Summer School**
Period: 14 Jun 2016
Mogens Fosgerau (Lecturer)
Transport policy and behaviour
Department of Management Engineering

**11th ITEA Summer School**
13/06/2016 → 15/06/2016
Santiago, Chile
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

**NAMAcademy Quito, Ecuador**
FEDERICO ANTONIO CANU (Organizer)
Department of Management Engineering
UNEP DTU Partnership

**Description**
Coordinator, organizer, presenter and coach for the event

NAMAcademy - The NAMAcademy provides focused training on practical issues when designing climate change mitigation policies and actions, and the expectations of donors and financiers, assisting in bringing the initial idea to a well-structured concept designed to approach potential financiers.

**Related event**

**NAMAcademy Quito, Ecuador**
13/06/2016 → 17/06/2016
Quito, Ecuador
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**The 9th Triennial Symposium on Transportation Analysis (TRISTAN) (External organisation)**
Period: 12 Jun 2016
Jesper Larsen (Participant)
Department of Management Engineering
Management Science

**Description**
Member of the the scientific program committee
Degree of recognition: International
Links:
http://tristan-symposium.org/

**Related external organisation**

**The 9th Triennial Symposium on Transportation Analysis (TRISTAN)**
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar
GFEI Global Networking Meeting 2016
Period: 9 Jun 2016 → 10 Jun 2016
Aristeidis Tsakiris (Participant)
Department of Management Engineering
UNEP DTU Partnership

Description
The event brought together participants from all around the world. This includes G20 countries such as Canada, France, South Africa, Argentina, Brazil, Mexico and Indonesia, as well as developing countries such as Kenya, Uganda, Zimbabwe, Costa Rica, Panama, Malaysia and Vietnam.

The training included expert input and analysis on a range of topics, including an introduction to fuel economy concepts, in-depth training on fuel economy trends and developing country baselines to assess progress and inform cost-benefit analysis of different options. This year, the sessions also covered compliance and enforcement and expert panels on HDVs and electric vehicles. The event, which was held in collaboration with the Transport stream of the IEA’s Energy Efficiency training week is a unique global opportunity for practical learning, sharing experiences and expanding what works.

Links:
http://www.globalfueleconomy.org/gfei16 (Presentations from the event)

Related event
GFEI Global Networking Meeting 2016
09/06/2016 → 10/06/2016
Paris, France
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
Nyborg, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Case studies from CEE countries**
Period: 8 Jun 2016
Emilie Rosenlund Soysal (Speaker)
Lena Kitzing (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Links:
http://rekk.hu/downloads/events/DTU-8-June-Workshop-presentations-Poland,%20Croatia,%20Slovakia.pdf (Presentation slides)

**Related event**
REKK-AURES Workshop: Regional RES Planning. : Renewable Energy Strategies in the 2020 context
08/06/2016 → …
Budapest, Hungary
Activity: Talks and presentations › Conference presentations

**Conference on virtual work**
Period: 8 Jun 2016
Signe Poulsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Conference on virtual work

**Related event**
Conference on virtual work
08/06/2016 → 08/06/2016
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**EFMC 2016**
Period: 8 Jun 2016 → 9 Jun 2016
Susanne Balslev Nielsen (Organizer)
Centre for Facilities Management
DTU Climate Centre
Department of Management Engineering
Systems Analysis

**Description**
Chair of scientific committee and member of the program comittee
The annual European Facilities Management Conference EFMC.
Documents:
EFMC2016_proceeding

**Related event**
EFMC 2016: FM - enhancing people and business
08/06/2016 → 09/06/2016
Milan, Italy
Fast robust solutions to stochastic VRPs using SIMD instructions
Period: 8 Jun 2016
Rune Larsen (Speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Related event
Verolog 2016: Annual workshop of the EURO working group on Vehicle Routing and Logistics optimization
06/06/2016 → 08/06/2016
Nantes, France
Activity: Talks and presentations › Conference presentations

Niche development and upgrading in the PV value chain: The case of local assembly of PV panels in Senegal
Period: 8 Jun 2016
Ivan Nygaard (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Degree of recognition: International
Documents:
local assembly of PV modules in Senegal, EU-SPRI conference 2016 final

Related event
2016 Annual Conference of the EU-SPRI Forum
07/06/2016 → 10/06/2016
Lund, Sweden
Activity: Talks and presentations › Conference presentations

Inception Workshop of the UNEP District Energy in Cities Initiative Project
Period: 7 Jun 2016
Xianli Zhu (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentation on the UN Sustainable Energy for All Initiative, the Copenhagen Centre on Energy Efficiency serves as the SEforALL EE hub, and the role of the Hub in the UNEP District Energy Project, both globally and in China
Presentation on 'Role of the Copenhagen Centre on Energy Efficiency in the UNEP District Energy Project'
Documents:
朱仙麗-哥本哈根能效中心在区域能源项目中的角色

Related event
Inception Workshop of the UNEP District Energy in Cities Initiative Project
07/06/2016 → 07/06/2016
Beijing, China
Activity: Talks and presentations › Conference presentations
Period: 7 Jun 2016
Mattia Baldini (Speaker)
Department of Management Engineering
Energy Economics and Regulation
Documents:

Related event
EEM16 - 13th International Conference on the European Energy market
06/06/2016 → 09/06/2016
Porto, Portugal
Activity: Talks and presentations › Conference presentations

The role of NAMAs to enable a transformational change to low carbon and sustainable development
Period: 7 Jun 2016
Karen Holm Olsen (Invited speaker)
Department of Management Engineering
UNEP DTU Partnership
Documents:
The role of NAMAs for TC_7June

Related event
Donor Coordination Meeting: Facilitating access to climate finance for NAMA implementation to drive the implementation of NDCs
07/06/2016 → 08/06/2016
Helsinki, Finland
Activity: Talks and presentations › Conference presentations

IEA Energy Efficiency in Emerging Economies Training Week
Aristeidis Tsakiris (Participant)
Department of Management Engineering
UNEP DTU Partnership

Description
The International Energy Agency (IEA) hosted its second Energy Efficiency in Emerging Economies Training Week from 6 - 10 June 2016 inclusive in Paris. This event is central to the IEA’s ongoing engagement with emerging economies.

This training event offers a combination of lectures, interactive discussions, practical exercises and a site visit. Advanced courses are offered on each of the following end-use sectors:

1) Buildings; 2) Lighting, Appliances and Equipment; 3) Industry; 4) Transport (co-hosted with the Global Fuel Economy Initiative (GFEI))

The courses will help participants ask the following questions regarding their countries’ energy efficiency policies: Where to start? What are the steps? Did it work? Where do I get help?

Also, cross-sectoral sessions on assessing the potential for energy efficiency, tracking progress, communication campaigns and finance were offered to all participants. On day 3 of the training event, participants had the opportunity to take part in site visits, which were organised within Paris and were pertinent to the course participants choose to follow.

A special focus this year was on measuring the social and economic benefits of energy efficiency measures.
Links:
http://www.iea.org/training/energyefficiencytrainingweek2016/
Related event

IEA Energy Efficiency in Emerging Economies Training Week: Transport
06/06/2016 → 10/06/2016
Paris, France
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Human factors and ergonomics in manufacturing and service industries (Journal)
Period: 1 Jun 2016 → …
Signe Poulsen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related journal

Human factors and ergonomics in manufacturing and service industries
Local database
Activity: Research › Peer review of manuscripts

International Energy Workshop 2016
Period: 1 Jun 2016 → 3 Jun 2016
Giada Venturini (Participant)
Department of Management Engineering

Related event

01/06/2016 → 03/06/2016
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Kick Off for Transport DTU
Period: 1 Jun 2016
Mads Paulsen (Participant)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: National

Related event

Kick Off for Transport DTU
01/06/2016 → 01/06/2016
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Machine Learning for Transportation
Period: 1 Jun 2016 → 3 Jun 2016
Filipe Rodrigues (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event

2016 Summer School on Big Data, Mobility Patterns and Transport Analytics
01/06/2016 → 03/06/2016
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Research Policy (Journal)
Period: 1 Jun 2016 → …
Anne Nygaard Tanner (Reviewer)
Department of Management Engineering
Technology and Innovation Management

Description
Research Policy

Related journal

Research Policy
0048-7333
Central database
Activity: Research › Peer review of manuscripts

69th Semi-Annual ETSAP Meeting
Period: 30 May 2016 → 31 May 2016
Giada Venturini (Speaker)
Department of Management Engineering
Documents:
ETSAP Cork Giada Venturini

Related event

69th Semi-Annual ETSAP Meeting
30/05/2016 → 31/05/2016
Activity: Talks and presentations › Conference presentations

Teacher of the Technology, Economics, Management & Organization (TEMO) course in Beijing, China
Period: 30 May 2016 → 8 Jun 2016
Peter Bo Sarka (Guest lecturer)
Management Science
Implementation and Performance Management
Department of Management Engineering

Description
Teaching the TEMO course at MSc in Chemical and Biochemical Engineering at the University of the Chinese Academy of Sciences (UCAS) in Beijing. This is part of the Chinese Danish collaboration called Sino-Danish Center (SDC).

I was coordinator, organizer and teacher.
Documents:
DTU SDC Haefte

Related external organisation

DTU & Sino-Danish Center
Beijing, China
**Energy Management Expert Group Meeting**  
*Period: 26 May 2016*  
Aristeidis Tsakiris (Participant)  
Department of Management Engineering  
UNEP DTU Partnership  

**Description**  
The Expert Group Meeting (EGM) being organized by UNIDO, aimed to bring together policy makers, leading EnMS implementation and conformity assessment experts and other EnMS relevant professionals to discuss, share experiences and possible solutions on the key issues and challenges associated with the broad and effective dissemination of EnMS.

**Related event**  
**Energy Management Expert Group Meeting**  
23/05/2016 → 27/10/2016  
Wien, Austria  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Scandinavian Society of Forest Economics Biennial meeting,**  
*Period: 25 May 2016 → 27 May 2016*  
Lea Ravnkilde Møller (Participant)  
Department of Management Engineering  
UNEP DTU Partnership  

**Description**  
the Biennial meeting of the Scandinavian Society of Forest Economics – SSFE 2016

**Related event**  
**Scandinavian Society of Forest Economics Biennial meeting,**  
25/05/2016 → 27/05/2016  
Oscarsborg, Norway  
Activity: Attending an event › Participating in or organising a conference

**3rd General Consortium Meeting of Smart Cities project, CITIES**  
*Period: 24 May 2016 → 25 May 2016*  
Angreine Kewo (Participant)  
Department of Management Engineering  

**Related event**  
**3rd General Consortium Meeting of Smart Cities project, CITIES**  
24/05/2016 → 25/05/2016  
Kgs. Lyngby, Denmark  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**A comparison of tools for energy planning**  
*Period: 24 May 2016 → 25 May 2016*  
Sara Ben Amer-Allam (Invited speaker)  
Department of Management Engineering  
Systems Analysis  
DTU Climate Centre  
Centre for IT-Intelligent Energy Systems in Cities
Description

Speaker and panel member
Links:

Related event
3rd General Consortium Meeting of the CITIES project
24/05/2016 → 25/05/2016
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

BRT, byudvikling og effekten af standsningssteder
Period: 24 May 2016
Marie Karen Anderson (Invited speaker)
Traffic modelling and planning
Department of Management Engineering

Related event
Kollektiv Trafik Forums Trafikkonference 2016: Flere passagerer i kollektiv trafik - hvordan?
24/10/2016 → 25/10/2016
Roskilde, Denmark
Activity: Talks and presentations › Conference presentations

Danish Act on Processing of Personal Data, in a Smart Cities Research Perspective
Period: 24 May 2016 → 25 May 2016
Alexander Martin Tureczek (Speaker)
Department of Management Engineering
Systems Analysis
Degree of recognition: International
Documents:
poster_consortium

Related event
CITIES consortium 2016
24/05/2016 → 25/05/2016
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Integrated energy system models incorporating spatial and temporal detail
Period: 24 May 2016
Amalia Rosa Pizarro Alonso (Speaker)
Department of Management Engineering
Documents:
Amalia Pizarro-WholeSem

Related event
Integrated energy system models incorporating spatial and temporal detail
24/05/2016 → 24/05/2016
London, United Kingdom
Activity: Talks and presentations › Conference presentations
Optimization of Medical Bed Resources using Queueing Theory and Hill Climbing
Period: 24 May 2016 → 25 May 2016
Anders Reenberg Andersen (Guest lecturer)
Department of Management Engineering
Management Science
Operations Research
Degree of recognition: National

Related event
Statistical Analysis of Intra-firm Data
24/05/2016 → 25/05/2017
København, Denmark
Activity: Talks and presentations › Conference presentations

NAMAcademy 2016
Period: 23 May 2016 → 27 May 2016
FEDERICO ANTONIO CANU (Organizer)
Department of Management Engineering
UNEP DTU Partnership

Description
Coordinator, organizer, presenter and coach for the event
NAMAcademy - The NAMAcademy provides focused training on practical issues when designing climate change mitigation policies and actions, and the expectations of donors and financiers, assisting in bringing the initial idea to a well-structured concept designed to approach potential financiers.

Related event
NAMAcademy 2016
23/05/2016 → 27/05/2016
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

4th International Spring School on Systems Engineering
Period: 22 May 2016
Josef Oehmen (Organizer)
Department of Management Engineering
Engineering Systems Group

Description
Organization of event and lecturing.
Organizer and host of the 4th International Spring School on Systems Engineering.

Related event
4th International Spring School on Systems Engineering
23/05/2016 → 27/05/2016
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Opplæg på Hammel Neurocenter: Effektivisering og arbejdsmiljø
Period: 19 May 2016
Kasper Edwards (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Oplæg for Hammel Neurocenter

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

CORDEX 2016
Period: 18 May 2016
Kirsten Halsnæs (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
The International Conference on Regional Climate CORDEX 2016
Documents:
Cordex 2016 - kirsten

Related event

CORDEX 2016: The International Conference on Regional Climate
17/05/2016 → 20/05/2016
Stockholm, Sweden
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

HIRHAM5: A Regional Coupled Model System to Examine Ocean-Atmosphere-Sea Ice, Ice Sheet and Permafrost Interactions in the Arctic
Period: 18 May 2016
Morten Andreas Dahl Larsen (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Co-author
Links:
http://www.icrc-cordex2016.org/

Related event

International Conference on Regional Climate - CORDEX 2016
16/05/2016 → 20/05/2016
Stockholm, Sweden
Activity: Talks and presentations › Conference presentations

Improved simulation of precipitation on the regional scale by coupled climate and hydrology modelling
Period: 18 May 2016
Morten Andreas Dahl Larsen (Other)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Links:
http://www.icrc-cordex2016.org/

Related event
International Conference on Regional Climate - CORDEX 2016
16/05/2016 → 20/05/2016
Stockholm, Sweden
Activity: Talks and presentations › Conference presentations

Visit by UK delegation
Period: 17 May 2016
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Visit by UK delegation (Smart City Activities)

Visit by UK delegation
17/05/2016 → 17/05/2016
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

14th International Design Conference
Period: 16 May 2016
Josef Oehmen (Participant)
Department of Management Engineering
Engineering Systems Group

Description
Paper presentation, session chairing, workshop presenter

14th International Design Conference
16/05/2016 → 19/05/2016
Dubrovnik, Croatia
Activity: Attending an event › Participating in or organising a conference

14th International Design Conference
Period: 16 May 2016 → 19 May 2016
Anja Maier (Participant)
Engineering Systems
Department of Management Engineering
Copenhagen Center for Health Technology

Description
14th International Design Conference (DESIGN16)
Links:
Related event

14th International Design Conference
16/05/2016 → 19/05/2016
Dubrovnik, Croatia
Activity: Attending an event › Participating in or organising a conference

Future of Design Research @ Workshop Design Research: 10 Years On
Period: 16 May 2016
Anja Maier (Invited speaker)

Engineering Systems
Department of Management Engineering
Copenhagen Center for Health Technology
Links:
https://zenodo.org/record/55977#.V2apX-uLRD8
http://dx.doi.org/10.5281/zenodo.55977

Related event

14th International Design Conference
16/05/2016 → 19/05/2016
Dubrovnik, Croatia
Activity: Talks and presentations › Conference presentations

Preparing for fully coupled climate-hydrological modelling in data-sparse regions applied over the Crati River catchment in Southern Italy
Period: 16 May 2016 → 21 May 2016
Morten Andreas Dahl Larsen (Speaker)

Department of Management Engineering
Systems Analysis
DTU Climate Centre
Links:
http://www.icrc-cordex2016.org/

Related event

International Conference on Regional Climate - CORDEX 2016
16/05/2016 → 20/05/2016
Stockholm, Sweden
Activity: Talks and presentations › Conference presentations

Environmental and SD guidelines- for ITMOS and the SDM
Period: 15 May 2016
Karen Holm Olsen (Invited speaker)

Department of Management Engineering
UNEP DTU Partnership
Documents:
Olsen_ITMO environmental and SD guidelines

Related event

Implementation of markets and non-markets provisions in the Paris Agreement: Side event at SBSTA 44 session in Bonn, May 2016
15/05/2016 → ...
Bonn, Germany
Power market integration, focusing on the CHP switch to biomass and electric heating to replace fossil-fueled heating
Period: 12 May 2016
Henrik Klinge Jacobsen (Lecturer)
Department of Management Engineering
Energy Economics and Regulation

Description
Contribution to capacity building course: Capacity building for Renewable Energy Technologies and Policy in Ethiopia, UN City, Copenhagen, 9-13 May 2016. Room 0.9.32
Programme THURSDAY
12-May
Module 4: Managing the energy mix and energy efficiency
Convener: Gordon Mackenzie (UNEP DTU Partnership)
Integration of RETs into the grid: modelling and policy. Kenneth Karlsson, DTU Systems Analysis. 09.30 - 10.45
Power market integration, focusing on the CHP switch to biomass and electric heating to replace fossil-fueled heating. Henrik Klinge Jacobsen. 11.00 - 12.15.
Global targets and strategies for doubling the rate of EE. Tim Farrell, Ksenia fom EE Hub. 13.00 - 14.30
Energy Efficiency in Denmark. Jacob Høgh, Danish Energy Agency. 15.00 - 16.15

Documents:
Henrik Jacobsen presentation: UNEP Ethiopian capacity building course May 2016

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Leaders in Supply Chain: Cyber Security
Period: 11 May 2016
Daniel Alberto Sepúlveda Estay (Keynote speaker)
Department of Management Engineering
Management Science

Description
Key Note Speaker: Leaders in Supply Chain: Cyber Security
Delivered the key Note titled: "Systems approach to Cyber risks"

Links:
https://www.ciltuk.org.uk/Events/EventDetails.aspx?dateid=2350 (Webpage at the Chartered Institute for Transport and Logistics about the Key note speech)

Related event
Leaders in Supply Chain: Cyber Security
11/05/2016 → …
Activity: Talks and presentations › Conference presentations

Modelling of Biogas Supply Chains
Period: 11 May 2016
Ida Græsted Jensen (Lecturer)
Department of Management Engineering
Energy Economics and Regulation

Documents:
Presentation

Related event
Capacity building for Renewable Energy Technologies and Policy in Ethiopia
**Expert Group Meeting on “Special Needs and Challenges in Developing Countries for Achieving Sustainable Transport”**

*Period:* 10 May 2016 → 11 May 2016  
*Subash Dhar (Participant)*

**Department of Management Engineering**

**UNEP DTU Partnership**

**Description**

Role of Fuels and Vehicle Technologies in achieving sustainable transport

**Documents:**

Technology Fuel and Vehicles 10 May

**Related event**

**IEA Workshop on Transport, Energy Efficiency & Behaviour**  
*Period:* 10 May 2016 → 11 May 2016  
*Giada Venturini (Participant)*

**Department of Management Engineering**

**Related event**

**IEA Workshop on Transport, Energy Efficiency & Behaviour**  
*Period:* 10/06/2015 → 11/06/2016  
*Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.*

**The Knowledge City as a project machine**

*Period:* 3 May 2016  
*Susanne Balslev Nielsen (Lecturer)*

**Department of Management Engineering**

**Centre for Facilities Management**

**Systems Analysis**

**DTU Climate Centre**

**Description**

Visit at DTU by Knowledge City Lillestrøm in Norway

**Documents:**

Susanne_Kundskabsbyen_projektmaskinge_03052016_2

**Related external organisation**

**Unknown external organisation**

*Activity: Talks and presentations › Conference presentations***

**Version2 Conference and Exhibition**

*Period:* 3 May 2016 → 4 May 2016  
*Per Sieverts Nielsen (Participant)*

**Department of Management Engineering**
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
Vision2 Conference and Exhibition

Related event

Version2 Conference and Exhibition
03/05/2016 → 04/05/2016
København, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Version2 Conference and Exhibition
Period: 3 May 2016 → 4 May 2016
Alexander Martin Tureczek (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
Data and security conference, 2 days about how data breaches occur, how to prevent it and the legal part of data protection.

Related event

CAVI afslutningskonference
Period: 27 Apr 2016
Signe Poulsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
CAVI afslutningskonference

Related event

CAVI afslutningskonference: CAVI afslutningskonference
27/04/2016 → 27/04/2016
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Forskningens Døgn 2016
Period: 27 Apr 2016
Christine Ipsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Forskningens Døgn: Begejstring og belastning i videnarbejdet - også over distancer

**Related event**

**Forskningens Døgn 2016**
25/04/2016 → 29/04/2016
Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**CESUN Europe Event**
Period: 21 Apr 2016
Josef Oehmen (Participant)
Department of Management Engineering
Engineering Systems Group

**Description**
Representation of DTU's Engineering Systems Division
Conference and workshop of CESUN University Alliance network

**Related event**

**CESUN Europe Event: Comprehensive Engineering: Systems and Social Science - Humanities - Big data - Complexity**
21/04/2016 → 22/04/2016
Delft, Netherlands
Activity: Attending an event › Participating in or organising a conference

**CESUN Europe Event**
Period: 21 Apr 2016 → 22 Apr 2016
Anja Maier (Participant)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

**Description**
CESUN - Council of Engineering Systems Universities
Links:
http://www.tbm.tudelft.nl/en/current/events/cesun-europe-event/
http://cesun.org/ (Council of Engineering Systems Universities)

**Related event**

**CESUN Europe Event: Comprehensive Engineering: Systems and Social Science - Humanities - Big data - Complexity**
21/04/2016 → 22/04/2016
Delft, Netherlands
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**On the hydrological performance in preparation for fully coupled climate-hydrology modelling in a data-sparse region**
Period: 17 Apr 2016 → 22 Apr 2016
Morten Andreas Dahl Larsen (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Related event

**EGU General Assembly 2016**
17/04/2016 → 22/04/2016
Vienna, Austria
Activity: Talks and presentations › Conference presentations

**The future of the CDM SD tool**
Period: 15 Apr 2016
Karen Holm Olsen (Invited speaker)
Department of Management Engineering
UNEP DTU Partnership
Documents:
Olsen_future of the CDM SD tool_14 April2016

Related event

**Gold Standard Conference 2016: Grow to Zero**
14/04/2016 → 15/04/2016
Zürich, Switzerland
Activity: Talks and presentations › Conference presentations

**12th Conference of the European Academy of Occupational Health Psychology**
Period: 13 Apr 2016
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Symposium organizer and chair: Leadership – gaining shared understanding in interventions
Organising and chairing the Symposium: Leadership – gaining shared understanding in interventions

Related event

**12th Conference of the European Academy of Occupational Health Psychology: OHP in Times of Change: Society and the workplace**
10/04/2016 → 13/04/2016
Athens, Greece
Activity: Talks and presentations › Conference presentations

**Swiss Economic Institute Seminar**
Period: 13 Apr 2016
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering

Description
Seminar at ETH

Related event

**Swiss Economic Institute Seminar**
13/04/2016 → …
Zurich, Switzerland
**Symposium: Leadership – gaining shared understanding in interventions**

**Period:** 13 Apr 2016

Christine Ipsen (Organizer)

Department of Management Engineering

Management Science

Implementation and Performance Management

**Description**

Symposium: Leadership – gaining shared understanding in interventions

**Related event**

**Symposium: Leadership – gaining shared understanding in interventions**

13/04/2016 → 13/04/2016

Athens, Greece

Activity: Attending an event › Participating in or organising a conference

**Network meeting in the International Network of Sustainable Organizational Interventions (INSOI) (External organisation)**

**Period:** 10 Apr 2016

Christine Ipsen (Participant)

Department of Management Engineering

Management Science

Implementation and Performance Management

**Description**

In Athens, Greece - coordinating new research activities and collaboration

**Related external organisation**

**Network meeting in the International Network of Sustainable Organizational Interventions (INSOI)**

Activity: Membership › Membership of research networks or expert groups

**ENERDAY 2016 - 11th Conference on Energy Economics and Technology**

**Period:** 8 Apr 2016

Mattia Baldini (Speaker)

Department of Management Engineering

Energy Economics and Regulation

**Description**

Comparative survey on the literature concerning Energy Efficiency (EE) and Renewable Energy Sources (RES) as means to achieve CO2 reductions.

**ENERDAY 2016 - 11th Conference on Energy Economics and Technology**

**Energy Efficiency and Demand Response**

Links:


**Related event**


07/04/2016 → 08/04/2016

Dresden, Germany

Activity: Talks and presentations › Conference presentations
How to organise for an article-based Ph.D.
Period: 8 Apr 2016
Giulia Nardelli (Lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Centre for Facilities Management

Description
Guest lecture during a Ph.D. course at Roskilde University

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Big Data og FM: Buzzword eller realitet?
Period: 7 Apr 2016
Susanne Balslev Nielsen (Invited speaker)
Department of Management Engineering
Centre for Facilities Management
Systems Analysis
DTU Climate Centre

Description
Indlæg på DFM’s årskonference 2016
Documents:
DFM Årskonference_2016

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

DFM netværks Årskonference
Period: 7 Apr 2016
Giulia Nardelli (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Centre for Facilities Management

Description
Presentation w/ Jakob Møltsen: Innovation Management or conflict resolution? How can FM innovators ensure success of innovation and improvement processes, while dealing with a heterogeneous group of stakeholders and their needs and expectations?

Presentation w/ Jakob Møltsen: Innovation Management or conflict resolution?

Related event

DFM netværks Årskonference
07/04/2016 → 08/04/2016
Helsingør, Denmark
**Oplæg og workshop for HK København: Lean og arbejdsmiljø**
Period: 7 Apr 2016
Kasper Edwards (Keynote speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Oplæg og workshop for HK

**Related external organisation**
Unknown external organisation

**48th Annual Conference of the Nordic Ergonomics and Human Factors Society's (NES) (Event)**
Period: 1 Apr 2016 → 1 Jun 2016
Signe Poulsen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Review of abstracts

**Related event**
48th Annual Conference of the Nordic Ergonomics and Human Factors Society's (NES): Ergonomics in Theory and Practice
14/08/2016 → 17/08/2016
Kuopio, Finland

**PhD Project Pitch Video: Cyber risk and security in the global supply chain**
Period: 21 Mar 2016
Daniel Alberto Sepúlveda Estay (Participant)
Department of Management Engineering
Management Science

**Description**
A 1 minute pitch of the PhD project "Cyber risk and Security in the global supply chain"
Links:
https://www.youtube.com/watch?v=6_fD2SXc4LE

**The PhD roller coaster: Systems Biology PhD Introductory course**
Period: 18 Mar 2016
Christine Ipsen (Speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management
Annual Design Society Board of Management and Advisory Board Meeting (External organisation)
Anja Maier (Participant)

Engineering Systems Group
Department of Management Engineering
Copenhagen Center for Health Technology
Production and Service Management

Description
Body type: Advisory Board
Degree of recognition: International
Links:
http://www.designsociety.org

Seminar math-stat KU
Period: 9 Mar 2016
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering

MADE Phd konference
Christina Villefrance Møller (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management

MADE Phd konference
08/03/2016 → 10/03/2016
Korsør, Denmark
Activity: Attending an event › Participating in or organising a conference

Improvements in Organizations
Period: 7 Mar 2016 → 8 Mar 2016
Christine Ipsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
Improvements in organizations - coordinating new research activities and co-authoring a book chapter

**Related event**

*2nd Improvements in Organizations Symposium*
07/03/2016 → 08/03/2016
Stockholm, Sweden

Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Constructing and Evaluating Models in Physics and in the Engineering Sciences: with Stig Andur Pedersen**
Period: 4 Mar 2016
Martin Mose Bentzen (Lecturer)
Department of Management Engineering
Technology and Innovation Management

**Description**
DFS annual meeting

**Related external organisation**

*Unknown external organisation*
Activity: Talks and presentations › Conference presentations

**DiCyPS årsmøde 2016**
Period: 3 Mar 2016
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

**Description**
DiCyPS årsmøde 2016

**Related event**

*DiCyPS årsmøde 2016*
03/03/2016 → 03/03/2016
Ålborg, Denmark

Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**34th International Conference of the System Dynamics Society (Event)**
Period: 1 Mar 2016 → 31 May 2016
Daniel Alberto Sepúlveda Estay (Member)
Department of Management Engineering

Management Science
Degree of recognition: International
Documents:
34th International System Dynamics Conference Booklet 2016

**Related event**

*34th International Conference of the System Dynamics Society*
### Endnu et søm i forebyggelseskisten

**Period:** 1 Mar 2016  
**Christine Ipsen (Participant)**  
**Department of Management Engineering**  
**Management Science**  
**Implementation and Performance Management**

**Description**

Med Charlotte Mandrups stress-bog "Vær professionel på jobbet – Lad følelserne blive hjemme" har ledere fået et redskab, de kan give til medarbejderne – med beskeden: "Forebyggelse af stress – den klarer du selv".

Af Christine Ipsen, lektor, DTU Management Engineering, Danmarks Tekniske Universitet

Links:

### World Sustainable Energy Days 2016

**Period:** 24 Feb 2016 → 26 Feb 2016  
**Aristeidis Tsakiris (Participant)**  
**Department of Management Engineering**  
**UNEP DTU Partnership**

**Description**

Poster presentation at the Young Researchers Conference: Energy Efficiency & Biomass

Links:

### Related event

**World Sustainable Energy Days 2016**  
24/02/2016 → 26/02/2016  
Wels, Austria  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

### Regional Capacity Building Workshop for Technology Needs Assessment (TNA) project: Barrier analysis, enabling frameworks and technology action plans

**Period:** 23 Feb 2016 → 26 Feb 2016  
**Ivan Nygaard (Lecturer)**  
**Department of Management Engineering**  
**UNEP DTU Partnership**  
**Degree of recognition:** International

Links:
http://www.tech-action.org/Events/Regional-CB-Workshop-Senegal-February-2016 (Presentations can be downloaded from project webpage)

### Related event

**Regional Capacity Building Workshop for Technology Needs Assessment (TNA) project**  
23/02/2016 → 26/02/2016  
Dakar, Senegal  
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities
From Counting to Connecting at KU's Digital Social Science Lab: Network Visualisations and Complex Social Systems

Period: 18 Feb 2016
Pedro Parraguez Ruiz (Keynote speaker)
Engineering Systems Group
Department of Management Engineering
Production and Service Management

Description
Presentation about Network Visualisations and Complex Social Systems at KU's Digital Social Science Lab opening.

Links:
http://dx.doi.org/10.5281/zenodo.46473 (Presentation slides)
http://dx.doi.org/10.5281/zenodo.46473

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Participatory design of new workplaces and the role of ergonomists
Period: 18 Feb 2016 → 19 Feb 2016
Ole Broberg (Lecturer)
Production and Service Management
Engineering Systems Group
Department of Management Engineering

Description
School of Technology and Health, KTH, Stockholm

Related event
Postgraduate course in design of new workplaces
18/02/2016 → 19/02/2016
Stockholm, Sweden
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Sharing as a strategy for optimised use
Period: 18 Feb 2016
Rikke Brinkø Berg (Invited speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Presentation at the EuroFM Winterschool 2016 Symposium, Stuttgart

Related event
EuroFM winterschool 2016: Space Sharing
15/02/2016 → 19/02/2016
Stuttgart, Germany
Activity: Talks and presentations › Conference presentations
Seminar
Period: 16 Feb 2016
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering

Description
Economics Seminar

Related event

Seminar
01/01/2016 → 11/08/2017
Copenhagen, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Bygningsaflevering - en vej til bæredygtige driftsvenlige bygninger: INordic built konferencen "Bæredygtig drift af bygninger"
Period: 4 Feb 2016
Susanne Balslev Nielsen (Invited speaker)
Department of Management Engineering
Centre for Facilities Management
Systems Analysis
DTU Climate Centre

Description
Documents:
04022016_Bygningsaflevering_1

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Scandinavian lean experiences – Perspectives from a practitioner and a researcher: Keynote at Zürich University Hospital
Period: 4 Feb 2016
Kasper Edwards (Keynote speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event

Lean Thinking & Teamwork - Wie gelingt beides?: Tagung des UniversitätsSpitals Zürich in Zusammenarbeit mit der Universität Zürich
04/02/2016 → ...
Zürich, Switzerland
Activity: Talks and presentations › Conference presentations

Workshop om data og forretningsudvikling hos slutbrugere
Period: 3 Feb 2016
Per Sieverts Nielsen (Participant)
Department of Management Engineering
**Systems Analysis**

DTU Climate Centre

Centre for IT-Intelligent Energy Systems in Cities

**Description**

Data og forretningsudvikling hos slutbrugerne

**Related event**

**Workshop om data og forretningsudvikling hos slutbrugerne**

03/02/2016 → 03/02/2016

København, Denmark

Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

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**42490 Technology, Economics, Management & Organization**

Period: 1 Feb 2016 → 26 May 2016

Peter Bo Sarka (Organizer)

Department of Management Engineering

Management Science

Implementation and Performance Management

**Description**

Coordinator, organizer and teacher at the course: 42490 Technology, Economics, Management & Organization (TEMO)

Coordinator, organizer and teacher

Links:

http://www.kurser.dtu.dk/42490.aspx?menulanguage=da (Link to the course in the course database)

**Related event**

**42490 Technology, Economics, Management & Organization**

01/02/2016 → 26/05/2016

Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

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**Design Science Journal (Journal)**

Period: 1 Feb 2016 → …

Anja Maier (Editor)

Engineering Systems

Department of Management Engineering

Copenhagen Center for Health Technology

**Description**

Editorial board

Links:

http://www.designsciencejournal.org/

**Related journal**

**Design Science Journal**

Web of Science (2018): Indexed yes

Indexed in DOAJ

Local database

Activity: Research › Journal editor

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**Life cycle assessment of electric vehicle deployment in Copenhagen with a systemic perspective**

Period: 1 Feb 2016 → 15 Jun 2016

Jay Sterling Gregg (Supervisor)
Alexis Laurent (Main supervisor)  
Department of Management Engineering  
Systems Analysis  
Quantitative Sustainability Assessment

**Description**  
Master's Thesis  
Florence Alexia Bohnes  
s141069

Activity: Examinations and supervision › Supervisor activities

**Databeskyttelsesdagen**  
Period: 28 Jan 2016  
Per Sieverts Nielsen (Participant)  
Department of Management Engineering  
Systems Analysis  
DTU Climate Centre  
Centre for IT-Intelligent Energy Systems in Cities

**Description**  
Databeskyttelsesdagen

**Related event**

**Databeskyttelsesdagen**  
28/01/2016 → 28/01/2016  
København, Denmark  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Master Class om effektivitet og værdiskabelse: En bottom-up tilgang til udvikling på Rigshospitalets Hjertecenter**  
Period: 26 Jan 2016  
Kasper Edwards (Keynote speaker)  
Department of Management Engineering  
Management Science  
Implementation and Performance Management

**Description**  
Oplæg på CFL - Center For Ledelse klubhusmøde

**Related external organisation**

**Unknown external organisation**  
Activity: Talks and presentations › Conference presentations

**PhD assessment (DTU candidate)**  
Period: 26 Jan 2016 → 1 May 2016  
Christine Ipsen (Internal examiner)  
Department of Management Engineering  
Management Science  
Implementation and Performance Management

**Description**  
Chairman  
Degree of recognition: Local  
Activity: Examinations and supervision › Internal examination
Climate Change, Agriculture and Food Security: The UNEP Emissions Gap Report - Forest related Mitigation activities
Period: 21 Jan 2016
Riyong Kim Bakkegaard (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Related external organisation

University College Cork
Ireland
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Tinbergen Seminar
Period: 21 Jan 2016
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering

Description
Tinbergen Seminar

Related event

Tinbergen Seminar
25/01/2016 → …
Amsterdam, Netherlands
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

A framework for conceptualisation for PSS solutions - On network-based development models (External organisation)
Period: 18 Jan 2016
Anja Maier (Chairman)
Copenhagen Center for Health Technology
Department of Management Engineering
Production and Service Management
Engineering Systems Group
Engineering Systems

Description
Technical University of Denmark, Department of Mechanical Engineering

Body type: PhD Assessment Committee
Degree of recognition: International

Related external organisation

A framework for conceptualisation for PSS solutions - On network-based development models
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Match making meeting in Paris - UERA - ENSUF
Period: 18 Jan 2016 → 19 Jan 2016
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

**Description**
Match making meeting in Paris - Urban Europe JP

**Related event**
Match making meeting in Paris - UERA - ENSUF
18/01/2016 → 19/01/2016
Paris, France
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Hvad er hot og hvad er not?: Forskning i FM - 2016
Period: 13 Jan 2016
Susanne Balslev Nielsen (Lecturer)
Department of Management Engineering
Centre for Facilities Management
Systems Analysis

**Description**
DFM’s nytårskur
Documents:
Hvad er hot og hvad er not_11012016_1

**Related external organisation**
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Temadag: Grøn omstilling og vækst som tema i planstrategier og kommuneplaner
Period: 13 Jan 2016
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis

**Description**
Temadag: Grøn omstilling og vækst som tema i planstrategier og kommuneplaner

**Related event**
Temadag: Grøn omstilling og vækst som tema i planstrategier og kommuneplaner
13/01/2016 → 13/01/2016
København, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Tænketank om arbejdsfællesskaber i Børn og ungeforvaltningen (External organisation)
Period: 10 Jan 2016 → 1 Jun 2016
Kasper Edwards (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Description
Udvikling af nye ledelsesprincipper
Links:

Related external organisation

Tænketank om arbejdsfællesskaber i Børn og ungeforvaltningen
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

7th International Conference Hydrogen Safety
Period: 1 Jan 2016 → 31 Oct 2017
Frank Markert (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
member of organisational committee

International Conference Hydrogen safety 2017

Related event

7th International Conference Hydrogen Safety
11/09/2017 → 13/09/2017
Hamburg, Germany
Activity: Attending an event › Participating in or organising a conference

Chairman: Nordic Ergonomic and Human Factor Society - NES 2016-2019 (External organisation)
Period: 1 Jan 2016 → 31 Dec 2018
Kasper Edwards (Chairman)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Chair of NES
Degree of recognition: International

Related external organisation

Chairman: Nordic Ergonomic and Human Factor Society - NES 2016-2019
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Member of Horison 2020 Advisory Group on Energy (External organisation)
Period: 1 Jan 2016 → 31 Dec 2017
Birte Holst Jørgensen (Participant)
Department of Management Engineering
Production and Service Management

Description
Giving advice to the European Commission on energy research

Body type: Advisory Group
Degree of recognition: International
Documents:
Birte Holst Jørgensen - Invitation letter renewed members

Related external organisation

Member of Horison 2020 Advisory Group on Energy
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

10th ITEA Summer School. Institute of Transport Economics, Oslo
Period: 2015
Mogens Fosgerau (Lecturer)
Transport policy and behaviour
Department of Management Engineering

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Arbejdsmiljøklagenævnet (External organisation)
Period: 2015
Rikke Seim (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Links:
http://ast.dk/naevn/arbejdsmiljoklagenaevenet/om-naevnet

Related external organisation

Arbejdsmiljøklagenævnet
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Assessment committee PhD student Mikkel Thorhauge (External organisation)
Period: 2015
Mette Møller (Chairman)
Department of Transport
Transport policy and behaviour

Related external organisation

Assessment committee PhD student Mikkel Thorhauge
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

CLINF: Climate-change effects on the epidemiology of infectious diseases and the impacts on Northern societies (External organisation)
Period: 2015 → 2020
Catharina Wolff von Bülow (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Body type: Advisory board member
Degree of recognition: International
Links:
Related external organisation

CLINF: Climate-change effects on the epidemiology of infectious diseases and the impacts on Northern societies
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Co-Supervisor for Marcelo Mazzero, Phd
Period: 2015 → 2017
Maj Munch Andersen (External examiner)
Department of Management Engineering
Activity: Examinations and supervision › Supervisor activities

European Journal of Operational Research (Journal)
Period: 2015
Mogens Fosgerau (Reviewer)
Transport policy and behaviour
Department of Management Engineering
Related journal

European Journal of Operational Research
0377-2217
Central database
Activity: Research › Peer review of manuscripts

Flow Formulation-based Model for the Curriculum-based Course Timetabling Problem
Period: 2015
Niels-Christian Fink Bagger (Guest lecturer)
Thomas Jacob Riis Stidsen (Guest lecturer)
Matias Sørensen (Guest lecturer)
Simon Kristiansen (Guest lecturer)
Department of Management Engineering
Management Science
Operations Research
Related event

7th Multidisciplinary International Conference on Scheduling: Theory and Applications
25/08/2015 → 28/08/2015
Prague, Czech Republic
Activity: Talks and presentations › Conference presentations

I E T Intelligent Transport Systems (Journal)
Period: 2015 → …
Mette Møller (Reviewer)
Department of Transport
Transport policy and behaviour
Related journal

I E T Intelligent Transport Systems
International Conference PMI Poland
Period: 2015
Joana Geraldi (Invited speaker)
Department of Management Engineering
Engineering Systems

Description
Invited speech at the PMI Practitioner Conference in Poland

Related event
International Conference PMI Poland
28/11/2015 → …
Activity: Talks and presentations › Conference presentations

National Research Council, Switzerland (External organisation)
Period: 2015
Mogens Fosgerau (Participant)
Transport policy and behaviour
Department of Management Engineering
Degree of recognition: International

Related external organisation
National Research Council, Switzerland
Activity: Membership › Membership in review committee

Norwegian Research Council, panel (External organisation)
Period: 2015
Mogens Fosgerau (Participant)
Transport policy and behaviour
Department of Management Engineering
Degree of recognition: International

Related external organisation
Norwegian Research Council, panel
Activity: Membership › Membership in review committee

PhD Assessment Committee Aalborg University (External organisation)
Period: 2015
Ole Broberg (Participant)
Copenhagen Center for Health Technology
Department of Management Engineering
Engineering Systems

Description
Member of assessment committee for thesis by Anne Helbo Jespersen "Audit as a form of regulatory instrument of psychosocial risks at work - principles and practice"

Related external organisation
PhD Assessment Committee Aalborg University
Activity: Membership › Membership in review committee

Preliminary examiner on doctoral dissertation by Mikko Dufva (External organisation)
Period: 2015 → …
Per Dannemand Andersen (Participant)
Department of Management Engineering
Technology and Innovation Management

Description
Body type: Aalto University
Degree of recognition: International

Related external organisation

Preliminary examiner on doctoral dissertation by Mikko Dufva
Activity: Membership › Membership in review committee

RENT 2015
Period: 2015
Evita Milana (Participant)
Technology and Innovation Management
Department of Management Engineering

Description
RENT XXIX Conference
Zagreb, Croatia November 18-20, 2015

Related event

RENT 2015: "Entrepreneurship Society - a Platform for New Solutions to Old Problems"
18/11/2015 → 20/11/2015
Zagreb, Croatia
Activity: Attending an event › Participating in or organising a conference

Technological Forecasting and Social Change (Journal)
Period: 2015 → 2016
Per Dannemand Andersen (Editor)
Department of Management Engineering
Technology and Innovation Management

Description
Managing Special Issue Guest Editor, FTA and Innovation Systems

Related journal

Technological Forecasting and Social Change
0040-1625
Central database
Activity: Research › Journal editor

Transportation Research Part D (Journal)
Period: 2015 → …
Mette Møller (Reviewer)
Department of Management Engineering
Visually Matter: Opening our eyes to the impact of visuals in our projects
Period: 2015
Joana Geraldi (Keynote speaker)
Department of Management Engineering
Engineering Systems

Description
Invited keynote speech on book published in 2015. The title of the presentation was Visually Matter: Opening our eyes to the impact of visuals in our projects.
Passion for Projects is a large conference for project management practitioners, and counts with around 700 participants.

Related event
Passion for Projects
10/03/2015 → ...
Activity: Talks and presentations › Conference presentations

DTU Sustain Conference 2015
Period: 17 Dec 2015
Henrik Saxe (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Poster skrevet sammen med conference arrangøren.

Documents:
151215 Mølhave Saxe DTU Sustain FINAL

Related event

DTU Sustain Conference 2015
17/12/2015 → 17/12/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
DTU Sustain Conference 2015
Period: 17 Dec 2015
Benjamin Paul Goldstein (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Oral Presentation - Testing the assertion that urban agriculture is sustainable
Documents:
Sustain2015_abstract_BG

Related event
DTU Sustain Conference 2015
17/12/2015 → 17/12/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Living Labs for Scalability
Period: 17 Dec 2015
Per Sieverts Nielsen (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities
Documents:
17-12-2015 Living Labs for Scalability - Per S. Nielsen og Alfred Heller - DTU Sustain

Related event
DTU Sustain Conference 2015
17/12/2015 → 17/12/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Regional modelling of the Earth System: a summary of recent work
Period: 17 Dec 2015
Morten Andreas Dahl Larsen (Other)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Related event
DTU Sustain Conference 2015
17/12/2015 → 17/12/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Sidste nyt fra forskningsfronten om arbejdspadser, FM og arbejdsmiljø: Oplæg på netværksmøde i DFM Innovation
Period: 17 Dec 2015
Susanne Balslev Nielsen (Lecturer)
Department of Management Engineering
Centre for Facilities Management
Systems Analysis
DTU Climate Centre

Description
2 timers oplæg/dialog
Documents:
SBNI_workplace_FM_arbejdsmiljø_17dec2015_4

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Sustainability trends: Trends in Green Innovation and Entrepreneurship
Period: 17 Dec 2015
Per Dannemand Andersen (Lecturer)
Department of Management Engineering
Technology and Innovation Management
Documents:
Trends in green innovation and entrepreneurship

Related event
DTU Sustain Conference 2015
17/12/2015 → 17/12/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Smart City workshop between TU Berlin, NTNU and DTU
Period: 7 Dec 2015 → 8 Dec 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
TU Berlin, NTNU and DTU Smart Cities workshop in Berlin

Related event
Smart City workshop between TU Berlin, NTNU and DTU
07/12/2015 → 08/12/2015
Berlin, Germany
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Designing Engineering Systems
Period: 4 Dec 2015
Anja Maier (Keynote speaker)
Department of Management Engineering
Engineering Systems Group
Copenhagen Center for Health Technology

Description
Inaugural Professorship Lecture

Links:
https://www.youtube.com/watch?v=YnxJqxiLhDs

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

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**Mass Customization and Engineering Change Management (External organisation)**
Period: 2 Dec 2015
Anja Maier (External examiner)
Department of Management Engineering
Production and Service Management
Engineering Systems Group
Engineering Systems

**Description**
Aarlborg University, Department of Mechanical and Manufacturing Engineering

Censor for PhD project

Body type: PhD Assessment Committee
Degree of recognition: International
Activity: Examinations and supervision › External examination

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**NAMA Fair**
Period: 2 Dec 2015
Karen Holm Olsen (Organizer)
Department of Management Engineering
UNEP DTU Partnership

**Description**
Organizer of technical support session and networking reception with posters

NAMA Fair at COP-21
Links:
http://unfccc.int/cooperation_support/nama/items/9287.php

**Related event**

**NAMA Fair: Financial and technical support**
02/12/2015 → 02/12/2015
Paris, France
Activity: Attending an event › Participating in or organising a conference

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**9th NOVO symposium**
Period: Nov 2015
Kasper Edwards (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Description**
Speaker, part of scientific committee

9th NOVO-symposium- Quality in health care
Related event

9th Novo symposium
12/11/2015 → 13/11/2015
Trondheim, Norway
Activity: Talks and presentations › Conference presentations

Match making møde på den Nederlandske Ambassade
Period: 23 Nov 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Match making møde på den nederlandske ambassade

Related event

Match making møde på den Nederlandske Ambassade
København, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

UCD Energy Institute & Electricity Research Centre Research Symposium 2015
Period: 23 Nov 2015 → 24 Nov 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
UCD Energy Institute & Electricity Research Centre Research Symposium 2015

Related event

UCD Energy Institute & Electricity Research Centre Research Symposium 2015
23/11/2015 → 24/11/2015
Dubling, Ireland
Activity: Attending an event › Participating in or organising a conference

Implementing changes in knowledge Work - what Works?
Period: 20 Nov 2015
Christine Ipsen (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event

3rd Scandinavian Conference Industrial Engineering and Management
18/11/2015 → 20/11/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations
Board member of Scandinavian Academy of Industrial Engineering and Management (External organisation)
Period: 19 Nov 2015 – 30 Nov 2017
Christine Ipsen (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Elected at the ScAIEM conference 2015 for a 2 year period

Body type: Board member
Degree of recognition: International
Links:
http://www.scaiem.org

Related external organisation

Board member of Scandinavian Academy of Industrial Engineering and Management
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Ethics as guiding principles in environmentally friendly product design?: The case of “Environmental improvements through product development, McAloone and Bey 2009
Period: 19 Nov 2015
Susanne Balslev Nielsen (Speaker)
Department of Management Engineering
Centre for Facilities Management
Systems Analysis
DTU Climate Centre
Energy Systems Analysis

Description

In collaboration with Martin Mose Bentzen, Tim McAloone and Stig Irving Olsen
Documents:
ScAim2015_version19nov2015

Related event
Scandinavian Conference Industrial Engineering and Management: The Challenge of Implementation
18/11/2015 → 20/11/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Participatory design of production systems
Period: 19 Nov 2015
Ole Broberg (Invited speaker)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Related event
3rd Scandinavian Conference Industrial Engineering and Management
18/11/2015 → 20/11/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations
3rd Scandinavian Academy of Industrial Engineering and Management (ScAIEM) Conference
Period: 18 Nov 2015 → 20 Nov 2015
Kasper Edwards (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Session chair, PhD workshop discussant, chair of board meeting

Related event

3rd Scandinavian Conference Industrial Engineering and Management
18/11/2015 → 20/11/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

3rd Scandinavian Conference Industrial Engineering and Management
Period: 18 Nov 2015 → 20 Nov 2015
Christina Villefrance Møller (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event

3rd Scandinavian Conference Industrial Engineering and Management
18/11/2015 → 20/11/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Energy Policy in the Nordic Electricity Market: A power system with high penetration of wind energy
Period: 18 Nov 2015
Klaus Skytte (Lecturer)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis
Documents:
Skytte_Nordic_power_system_Tsinghua_Beijing_181115

Related event

PhD workshop: Institute of Energy, Environment and Economy, Tsinghua University, Beijing,
18/11/2015 → 18/11/2015
Beijing, China
Activity: Talks and presentations › Conference presentations

Ethics as guiding principles in environmentally friendly product design?: The case of “Environmental improvements through product development, McAloone and Bey 2009
Period: 18 Nov 2015 → 20 Nov 2015
Stig Irving Olsen (Other)
Department of Management Engineering
Quantitative Sustainability Assessment
Description
Co-author
Documents:
ScAim2015_version19nov2015

Related event
3rd Scandinavian Conference Industrial Engineering and Management
18/11/2015 → 20/11/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Guest Lecturer - ISCM Program RHUL: Supply Chain Distribution Game and Matching Supply And Demand lectures
Period: 18 Nov 2015
Daniel Alberto Sepúlveda Estay (Guest lecturer)
Department of Management Engineering
Management Science

Description
Delivered two lectures as Guest lecturer in the International Masters of Supply Management program at the Royal Holloway University of London.

Related external organisation
Royal Holloway University of London
Egham, United Kingdom
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Regulering af det psykiske arbejdsmiljø
Period: 18 Nov 2015
Liv Starheim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Course on Work and Occupational Psychology
Activity: Other

A power system with high penetration of intermittent energy: how to regulate the marked
Period: 16 Nov 2015
Klaus Skytte (Lecturer)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis
UNEP DTU Partnership
Documents:
Skytte_power_system_with_high_penetration_of_VRE_Beijing_161115

Related event
SDC Seminar Integration of Wind Power in the Energy System: Sino-Danish Lessons to be Learned
16/11/2015 → 17/11/2015
Beijing, China
Activity: Talks and presentations › Conference presentations
Smart City Conference and Exhibition in Barcelona 2015
Period: 16 Nov 2015 → 19 Nov 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities
Description
Smart City Expo in Barcelona 2015
Related event
Smart City Conference and Exhibition in Barcelona 2015
16/11/2015 → 19/11/2015
Barcelona, Spain
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

KPI'ør social kapital og ledelse
Period: 11 Nov 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Description
Oplæg på TR-seminar i foreningen for ansatte i forsikring
Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Nordisk konference om Grøn omstilling af kommuner
Period: 11 Nov 2015 → 12 Nov 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities
Description
Nordisk konference om Grøn omstilling af kommuner
Related event
Nordisk konference om Grøn omstilling af kommuner
København, Denmark
Activity: Attending an event › Participating in or organising a conference

P-Lean – en metode til at arbejde med forbedring af det psykiske arbejdsmiljø
Period: 10 Nov 2015
Liv Starheim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event

**Arbejdsmiljøkonferencen**
09/11/2015 → 10/11/2015
Nyborg, Denmark
Activity: Talks and presentations › Conference presentations

Progressive heating and cooling: progRESsHEAT project in Helsingør, Denmark
Period: 10 Nov 2015
Sara Ben Amer-Allam (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Related event

**The role of Nordic municipalities and regions in the green transition : Energy festival**
10/11/2015 → …
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Arbejdsmiljø i rummet: Raketvidenskab eller tilgængeligt for arbejdsmiljøprofessionelle?
Period: 9 Nov 2015
Ole Broberg (Invited speaker)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Related event

Arbejdsmiljøkonferencen
09/11/2015 → 10/11/2015
Nyborg, Denmark
Activity: Talks and presentations › Conference presentations

**DEHA**
Period: 9 Nov 2015
Alexander Martin Tureczek (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
Presentation about the danish Act on Processing of Personal Data and the possible changes in the foreseeable future. (In danish)
Documents:
Persondataloven_DTU_original

Related event

**DEHA : Energy data, control and management**
Global Workshop to Accelerate Energy Efficiency: Challenges, Opportunities and Roadmaps
Period: 9 Nov 2015 → 12 Nov 2015
Aristeidis Tsakiris (Organizer)
Department of Management Engineering
UNEP DTU Partnership
Documents:
Global Workshop Report (Copenhagen-November 2015)
Links:
http://www.energyefficiencycentre.org/Nyheder/Nyhed?id=53a3729b-7939-4a7e-b9d3-af985c540ce4

Related event
Global Workshop to Accelerate Energy Efficiency: Challenges, Opportunities and Roadmaps
09/11/2015 → 12/11/2015
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference

Global Workshop to Accelerate Energy Efficiency: Challenges, Opportunities and Roadmaps
Period: 9 Nov 2015 → 12 Nov 2015
Jyoti Prasad Painuly (Participant)
Department of Management Engineering
UNEP DTU Partnership

Description
Global Workshop to Accelerate Energy Efficiency: Challenges, Opportunities and Roadmaps

Presentation at the workshop
Documents:
Challenges and Opportunities-Global Workshop-Nov- 2015

Related event
Global Workshop to Accelerate Energy Efficiency: Challenges, Opportunities and Roadmaps
09/11/2015 → 12/11/2015
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Global Workshop to Accelerate Energy Efficiency: Challenges, Opportunities and Roadmaps
Period: 9 Nov 2015 → 12 Nov 2015
Timothy Clifford Farrell (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Related event
Global Workshop to Accelerate Energy Efficiency: Challenges, Opportunities and Roadmaps
09/11/2015 → 12/11/2015
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

OECD/ITF Roundtable
Period: 9 Nov 2015
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering
Links:
https://www.youtube.com/watch?v=tASf1fVZpyc (Video)

Related event

OECD/ITF Roundtable
09/11/2015 → 10/11/2015
Paris, France
Activity: Talks and presentations › Conference presentations

OECD Roundtable: Quantifying the Socio-economic benefits of transport
Period: 9 Nov 2015
Mogens Fosgerau (Invited speaker)

Transport policy and behaviour
Department of Management Engineering
Links:
https://www.youtube.com/watch?v=tASf1fVZpyc (Fosgerau talk)

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Succes med forandring – lad medarbejderne formulere problemerne og finde løsningerne
Period: 9 Nov 2015
Kasper Edwards (Invited speaker)

Production and Service Management
Implementation and Performance Management

Related event

Arbejdsmiljøkonference 2015
08/11/2015 → 10/11/2015
Nyborg, Denmark
Activity: Talks and presentations › Conference presentations

Sustainable job design
Period: 9 Nov 2015
Rikke Seim (Lecturer)

Production and Service Management
Implementation and Performance Management

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Improved Regional Climate Model Simulation of Precipitation by a Dynamical Coupling to a Hydrology Model
Period: 5 Nov 2015 → 6 Nov 2015
Morten Andreas Dahl Larsen (Speaker)
Related event

**HyMex-Baltic Earth Workshop**
05/11/2015 → 06/11/2015
Rome, Italy
Activity: Talks and presentations › Conference presentations

**NTNU rector visit and workshops**
Period: 2 Nov 2015 → 3 Nov 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities
Description
NTNU rector visit and workshops

Related event

**NTNU rector visit and workshops**
02/11/2015 → 03/11/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**42002 Modelling and Analysis of Sustainable Energy Systems using Operations Research**
Period: 1 Nov 2015 → 30 Nov 2015
Mattia Baldini (Other)
Energy Systems Analysis
Department of Management Engineering
Systems Analysis
Description
Project helper

Related external organisation

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**47th Nordic Ergonomics and Human Factors Society annual conference 2015**
Period: 1 Nov 2015 → 4 Nov 2015
Kasper Edwards (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event
47th Nordic Ergonomics and Human Factors Society annual conference 2015: Creating Sustainable Work-Environments
01/11/2015 → 04/11/2015
Trondheim, Norway
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Global Cleaner Production & Sustainable Consumption Conference
Period: 1 Nov 2015 → 4 Nov 2015
Francesco Rosati (Speaker)
Department of Management Engineering
Technology and Innovation Management

Description
Global Cleaner Production & Sustainable Consumption Conference

Related event
Global Cleaner Production & Sustainable Consumption Conference: Accelerating the Transition to Equitable Post Fossil-Carbon Societies
01/11/2015 → 04/11/2015
Sitges, Barcelona, Spain
Activity: Talks and presentations › Conference presentations

ICAT Methodological Framework - Framework Guide (Journal)
Period: 1 Nov 2015
Karen Holm Olsen (Editor)
Department of Management Engineering
UNEP DTU Partnership

Description
Assessment framework for climate policies and actions with regard to impacts for greenhouse gas emission reductions, sustainable development and transformational change

Related journal
ICAT Methodological Framework - Framework Guide
Local database
Activity: Research › Editor of unfinished research anthology/collection

ICAT Sustainable Development Guidance (Journal)
Period: 1 Nov 2015
Karen Holm Olsen (Editor)
Department of Management Engineering
UNEP DTU Partnership

Description
Development of guidance to assess impacts for sustainable development of climate policies and actions

Related journal
ICAT Sustainable Development Guidance
Local database
Activity: Research › Editor of unfinished research anthology/collection

International Association HySafe (External organisation)
Period: 1 Nov 2015 → 31 Oct 2017
Frank Markert (Secretary)
Department of Management Engineering
Production and Service Management
Risk Research Group
Implementation and Performance Management

Description
member of board
elected by the members of HySafe for a 2 year period

Body type: international association
Degree of recognition: International

Related external organisation
International Association HySafe
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Engineering Systems: Designing Connections
Period: 30 Oct 2015
Anja Maier (Invited speaker)
Department of Management Engineering
Engineering Systems Group
Production and Service Management
Copenhagen Center for Health Technology

Description
Annual DTU PhD Graduation Ceremony 2015
Links:
http://www.dtu.dk/english/News/2015/11/Celebrating-this-year%E2%80%99s-new-PhD-graduates?id=0f2fa998-b8d1-4e25-9128-6e1a128222af (DTU PhD Graduation Ceremony 2015)

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Hvordan håndterer du den kommende persondatabeskyttelse
Period: 29 Oct 2015
Alexander Martin Tureczek (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
Gennemgang af ændringer i forhold til persondatabeskyttelse i forbindelse med ny EU forordning.

Related event
Hvordan håndterer du den kommende persondatabeskyttelse
29/10/2015 → 29/10/2015
Danmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

SE4All Global Energy Efficiency Forum on Cities
Jyoti Prasad Painuly (Participant)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentation on "Energy Efficiency in the City of Copenhagen"

Presentation in the workshop
Documents:
C2E2 Presentation-Copenhagen City -Final

Related event
29/10/2015 → 30/10/2015
Tokyo, Japan
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

CAVI seminar
Rikke Seim (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
CAVI Seminar - Center for forskning i arbejdsmiljøindsatser og virkemidler

Related event
CAVI seminar
28/10/2015 → 29/10/2015
Tisvildeleje, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

AMO afsluttende tolkeseminar
Period: 27 Oct 2015
Rikke Seim (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
AMO afsluttende tolkeseminar

Related event
AMO afsluttende tolkeseminar
27/10/2015 → …
Valby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

News from CMT and WP1 activities
Period: 26 Oct 2015
Per Sieverts Nielsen (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Documents:
CMT and WP1 pres PSN Oct26_2015

Related event

PhD/Postdoc workshop on October 26th 2015
26/10/2015 → …
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

68th Semi-Annual ETSAP Meeting
Period: 23 Oct 2015
Jacopo Tattini (Speaker)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

Description
Presentation entitled “Values of the interconnectors in the Nordic countries”

Presentation at 68th Semi-Annual ETSAP Meeting
Documents:
Values of the interconnectors in the Nordic countries

Related event

68th Semi-Annual ETSAP Meeting
23/10/2015 → 25/10/2015
Sophia Antipolis, France
Activity: Talks and presentations › Conference presentations

68th Semi-Annual ETSAP Meeting
Giada Venturini (Speaker)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

Description
Abstract: The challenging task of adequately including sociological aspects as human behaviours related to transport in economy-energy-environment models, may enable an inclusive representation of the system under analysis, thus providing results which are closer to reality. This work represents a preliminary review of energy systems models where a sufficiently detailed representation of the transport sector is present. This in particular allows to study which transport-related behaviours are modelled in energy system models and which methods are adopted, with the aim of comprehensively understand the opportunities and challenges of such implementation in TIMES-DK. The analysis firstly provides a classification of economy-energy-environment models, according to the level of integration of the transport system, here emphasizing the need for clarifying the aggregation level required in the representation of the transport system in order to include human behaviours. The study subsequently reviews above 25 models where different transport-related behaviours were accounted for, highlighting on the one side the focus and direction of the current research and on the other side the overlooked aspects. The work thus offers a contribution in this research area, providing an updated overview of selected transport-related behaviours and the different possibilities for representing them in integrated energy and transport models.

Presentation: Modelling Behaviour in Integrated Energy and Transport Models - A review
Related event

68th Semi-Annual ETSAP Meeting
23/10/2015 → 25/10/2015
Sophia Antipolis, France
Activity: Talks and presentations › Conference presentations

Flexibility for Variable Renewable Energy Integration in the Nordic Energy System: Danish & Nordic perspectives
Period: 22 Oct 2015
Klaus Skytte (Lecturer)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis
Documents:
Skytte_FLEXe_workshop_Finland_220915

Related event

FLEXe workshop: Majvik Kirkkonummi
21/10/2015 → 22/10/2015
Helsinki, Finland
Activity: Talks and presentations › Conference presentations

Panel discussion: Results and take-home messages from Sustainable Energy Systems 2050
Period: 22 Oct 2015
Klaus Skytte (Lecturer)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

Related event

Nordic Energy Research: Final seminar of Sustainable Energy Systems 2050
21/10/2015 → 22/10/2015
Oslo, Norway
Activity: Talks and presentations › Conference presentations

Introduction to Innovation
Period: 21 Oct 2015
Per Dannemand Andersen (Invited speaker)
Department of Management Engineering
Technology and Innovation Management

Related event

Innovation in Arctic
21/10/2015 → 21/10/2015
Nuuk, Greenland
Activity: Talks and presentations › Conference presentations

12th European Nutrition Conference (FENS)
Henrik Saxe (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment
Related event

12th European Nutrition Conference (FENS)
20/10/2015 → 23/10/2015
Berlin, Germany
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Research workshop on knowledge transfer in the oil offshore industry
Ole Broberg (Organizer)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Research workshop on knowledge transfer in the oil offshore industry

Related event

Research workshop on knowledge transfer in the oil offshore industry
19/10/2015 → 23/10/2015
Rio de Janeiro, Brazil
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Urbanisering og sammenhængskraft
Period: 19 Oct 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
Urbanisering og sammenhængskraft

Related event

Urbanisering og sammenhængskraft
19/10/2015 → 19/10/2015
Korsør, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Chairman of PhD Assessment Committee for Caroline Schaer (External organisation)
Period: 12 Oct 2015
Karen Holm Olsen (Chairman)
Department of Management Engineering
UNEP DTU Partnership

Description
PhD assessment committee for Caroline Schaer defending her thesis titled: "Governance and community responses to floods in poor peri-urban areas – The case of Urban Disaster Reduction and Climate Change Adaptation in Pikine, Senegal"
See above

**Related external organisation**

**Chairman of PhD Assessment Committee for Caroline Schaer**
*Activity: Membership › Membership in review committee*

**UTM Low Carbon Asia**  
*Subash Dhar (Speaker)*  
*Department of Management Engineering*  
*UNEP DTU Partnership*

**Related event**

**UTM Low Carbon Asia**  
*11/10/2015 → 13/10/2015*  
*Johor Bahru, Malaysia*  
*Activity: Talks and presentations › Conference presentations*

**RELATIONEL KOORDINERING – TEORI OG PRAKSI**  
*Period: 8 Oct 2015*  
*Kasper Edwards (Invited speaker)*  
*Department of Management Engineering*  
*Production and Service Management*  
*Implementation and Performance Management*

**Description**  
*Oplæg for Erfa-netværk*

**Related external organisation**

**Unknown external organisation**  
*Activity: Talks and presentations › Conference presentations*

**ASEM 2015 Annual Conference**  
*Period: 7 Oct 2015 → 10 Oct 2015*  
*Karen Murdock (Participant)*  
*Department of Management Engineering*  
*Technology and Innovation Management*

**Description**  
*Paper Presentation*  
*Conference presentation*

**Related event**

**ASEM 2015 Annual Conference**  
*Period: 07/10/2015 → 10/10/2015*  
*Indianapolis, United States*  
*Activity: Attending an event › Participating in or organising a conference*

**BSc program Strategic Analysis and Systems Design (Event)**  
*Period: 6 Oct 2015 → …*  
*Anders Stockmarr (Participant)*  
*Department of Applied Mathematics and Computer Science*
Department of Management Engineering

**Description**
Member of monitoring group

Member of DTU Internal monitoring group for the BSc program Strategic Analysis and Systems Design

Links:
http://www.dtu.dk/english/education/bachelor--beng-and-bsc-/bsc/strategic_analysis_and_systems_design (Strategic Analysis and Systems Design)

**Related event**

**BSc program Strategic Analysis and Systems Design**
06/10/2015 → …
Denmark
Activity: Membership › Membership of research networks or expert groups

**It takes a fully coupled model to get precipitation right**
Period: 6 Oct 2015
Morten Andreas Dahl Larsen (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis

**Related event**

**Water DTU 2nd Internal DTU Seminar**
06/10/2015 → 07/10/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

**CPH Climate plan**
Period: 5 Oct 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

**Description**
CPH Climate plan

**Related event**

**CPH Climate plan**
05/10/2015 → 05/10/2015
København, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**NAMAcademy 2015 - fall**
FEDERICO ANTONIO CANU (Organizer)
Department of Management Engineering
UNEP DTU Partnership
Description
Coordinator, organizer, presenter and coach for the event

NAMAcademy - The NAMAcademy provides focused training on practical issues when designing climate change mitigation policies and actions, and the expectations of donors and financiers, assisting in bringing the initial idea to a well-structured concept designed to approach potential financiers.

Related event
NAMAcademy 2015 - fall
04/10/2015 → 09/10/2015
Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Competitive edge and domestic learning in energy innovation systems in Denmark
Period: 1 Oct 2015
Mads Borup (Speaker)
Department of Management Engineering
Technology and Innovation Management

Description
Conference contribution

Related event
01/10/2015 → 01/01/2016
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Medlem af Ledernes Tænkertank om organisatorisk forebygelse af stress (External organisation)
Period: 1 Oct 2015 → 1 Dec 2017
Christine Ipsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Production and Service Management

Description
Participant - representing research

Related external organisation
Medlem af Ledernes Tænkertank om organisatorisk forebygelse af stress
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Transition towards Sustainable and Liveable Urban Futures
Period: 30 Sep 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Transition towards Sustainable and Liveable Urban Futures

Related event
Transition towards Sustainable and Liveable Urban Futures: JPI Urban Europe
30/09/2015 → 30/09/2015
Brussels, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Lean and servant leadership
Period: 26 Sep 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Presentation for Iceland Energy in Reykavik

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

The servant leadership of change - Successful change required leaders to stand back
Period: 25 Sep 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Presentation at the Servant Leadership conference at Bifrost University

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Hvilken effekt har driftsmålstyring på trivslen og hvad kan man med fordel måle på?
Period: 24 Sep 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Oplæg på Hvidovre Hospitals Arbejdsmiljødag

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

8th International Conference on Working on Safety
Period: 23 Sep 2015
Casper Sieben Schultz (Speaker)
Implementation and Performance Management
Department of Management Engineering
Production and Service Management
Risk Research Group

Description
Presentation entitled "Evaluation of the Danish Safety by Design in Construction Framework (SDCF)"
Oral presentation at WOS.net 2015
Documents:
Schultz & Jorgensen - Evaluation of the Danish Safety by Design in Construction Framework (SDCF)

Related event
8th International Conference on Working on Safety: Smart Prevention for Sustainable Safety
23/09/2015 → 25/09/2015
Porto, Portugal
Activity: Talks and presentations › Conference presentations

NAMAcademy Mozambique
Period: 22 Sep 2015 → 24 Sep 2015
FEDERICO ANTONIO CANU (Organizer)
Department of Management Engineering
UNEP DTU Partnership

Description
Coordinator, organizer, presenter and coach for the event
NAMAcademy Mozambique - The NAMAcademy provides focused training on practical issues when designing climate change mitigation policies and actions, and the expectations of donors and financiers, assisting in bringing the initial idea to a well-structured concept designed to approach potential financiers.

Related event
NAMAcademy Mozambique
22/09/2015 → 24/09/2015
Maputo, Mozambique
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

ICES Annual Science Conference 2015
Period: 21 Sep 2015 → 25 Sep 2015
Nuno Miguel Dias Cosme (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Participation in the ICES Annual Science Conference 2015 in Copenhagen, Denmark

Related event
ICES Annual Science Conference 2015
21/09/2015 → 25/09/2015
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference

Media Workshop
Period: 14 Sep 2015
Subash Dhar (Participant)
Department of Management Engineering
UNEP DTU Partnership

Description
Deep Decarbonisation Pathways for India

Related event

Media Workshop
16/09/2015 → …
Paris, France
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

4th symposium arranged by European Association for Research in Transportation
Period: 9 Sep 2015 → 11 Sep 2015
Mads Paulsen (Participant)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event

4th symposium arranged by European Association for Research in Transportation
09/09/2015 → 11/09/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

A meta-study on the significance of rail networks on public transport ridership
Period: 9 Sep 2015
Jesper Bláfoss Ingvarsson (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event

4th symposium arranged by European Association for Research in Transportation
09/09/2015 → 11/09/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

RESER Doctoral Colloquium 2015
Period: 9 Sep 2015
Giulia Nardelli (Speaker)
Production and Service Management
Centre for Facilities Management
Implementation and Performance Management
Department of Management Engineering

Description
Presentation at plenary session of RESER Doctoral Colloquium 2015 + participation as discussant/faculty member in parallel session in which Ph.D. students will present their research proposal and receive feedback.

"Writing an article-based Ph.D. dissertation". Presentation at plenary session of RESER Doctoral Colloquium 2015, Roskilde University, 9 September 2015.
Participation in parallel session of RESER Doctoral Colloquium.
Related event

**RESER Doctoral Colloquium 2015**
09/09/2015 → 09/09/2015
Roskilde, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

**4th symposium arranged by European Association for Research in Transportation**
Period: 8 Sep 2015 → 11 Sep 2015
Mogens Fosgerau (Organizer)
Transport policy and behaviour
Department of Management Engineering

Related event

**4th symposium arranged by European Association for Research in Transportation**
09/09/2015 → 11/09/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

**Få ergonomien med ind i arbejdsudviklingen**
Period: 8 Sep 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Description
Oplæg på fagligt træf for forflytningsvejledere

**RELATED KOORDINERING**
Period: 4 Sep 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Description
Oplæg for Social Kapital Netværket

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**DTU's Ligestillingsudvalg (External organisation)**
Period: 1 Sep 2015 → …
Christine Ipsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management
Production and Service Management

Related external organisation

DTU's Ligestillingsudvalg
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Firm and user community collaboration: A complex love story (External organisation)
Period: 1 Sep 2015
Anja Maier (Chairman)
Department of Management Engineering
Engineering Systems Group
Production and Service Management

Description
Technology and Innovation Management
Department of Management Engineering, Technical University of Denmark

Chair of PhD examination committee

Body type: PhD examination committee
Degree of recognition: International

Related external organisation

Firm and user community collaboration: A complex love story
Activity: Membership › Membership in review committee

International Journal of Workplace Health Management (Journal)
Period: 1 Sep 2015 → …
Christine Ipsen (Reviewer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
International Journal of Workplace Health Management (IJWHM) publishes double blind peer-reviewed research and practitioner articles and case studies which identify risks and challenges, best practice and real-life implications for the individual, the employer and public health.

Coverage includes:
• Individual health – primary care and prevention, health education and promotion, attitudes, behaviour and lifestyle choice
• Workplace culture – organizational change, management policies/procedures, employer and employee education, the business case for workplace health promotion, communication and training, how culture affects mental health, violence, stress and work-life balance
• Physical issues – musculoskeletal health/ergonomics, occupational health and safety, legislation and compliance, disability management, workplace hazards, risk factor modification

IJWHM is a key resource for public and private organizations, government, researchers, human resources/senior management, unions and those who manage and promote workplace health.
- See more at: http://www.emeraldgrouppublishing.com/products/journals/journals.htm?id=ijwhm#sthash.Ivt39z38.dpuf

Related journal

International Journal of Workplace Health Management
1753-8351
Central database  
Activity: Research › Peer review of manuscripts

**Reviewing Swedish research applications (Swedish Knowledge Foundation) (External organisation)**  
Period: 1 Sep 2015 → 1 Nov 2015  
Christine Ipsen (Member)  
Department of Management Engineering  
Management Science  
Production and Service Management  
Implementation and Performance Management

**Description**  
Reviewer.  
The foundation supports research at Sweden’s new universities and university colleges.  
Degree of recognition: International

**Related external organisation**  
**Reviewing Swedish research applications (Swedish Knowledge Foundation)**  
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**Technical Committee on Organizational Design and Management (External organisation)**  
Period: Aug 2015 → …  
Ole Broberg (Chairman)  
Department of Management Engineering  
Production and Service Management  
Engineering Systems Group

**Description**  
International Ergonomics Association (IEA)  
Co-Chair  
Degree of recognition: International

**Related external organisation**  
**Technical Committee on Organizational Design and Management**  
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**Techno-economic assessment of energy storage technologies in Denmark**  
Period: 28 Aug 2015  
Jay Sterling Gregg (External examiner)  
Department of Management Engineering  
Systems Analysis

**Description**  
Master's Thesis  
Ivo Georgiev  
Activity: Examinations and supervision › Supervisor activities

**Energy transition research in Asia – useful for practitioners of development cooperation?**  
Period: 27 Aug 2015  
Ivan Nygaard (Panel member)  
Department of Management Engineering
UNEP DTU Partnership

Related event

The International Sustainability Conference 2015  
25/08/2015 → 28/08/2015  
Falmer, Brighton, United Kingdom  
Activity: Talks and presentations › Conference presentations

STYRK SAMARBEJDET OG FÅ BEDRE RELATIONEL KOORDINERING  
Period: 27 Aug 2015  
Kasper Edwards (Invited speaker)  
Department of Management Engineering  
Production and Service Management  
Implementation and Performance Management

Description
Oplæg på COK sommerskole

Related external organisation

Unknown external organisation  
Activity: Talks and presentations › Conference presentations

Private sector investment in the biofuel value chain in Ghana seen in an innovation system perspective  
Period: 26 Aug 2015  
Ivan Nygaard (Speaker)  
Department of Management Engineering  
UNEP DTU Partnership  
Degree of recognition: International  
Documents:  
Præsentation ITS conference final

Related event

6th International Sustainability Transitions Conference, Brighton (UK)  
25/08/2015 → 28/08/2015  
Brighton, United Kingdom  
Activity: Talks and presentations › Conference presentations

A methodology for designing flexible multi-generation systems  
Period: 25 Aug 2015  
Christoffer Ernst Lythcke-Jørgensen (Invited speaker)  
Department of Mechanical Engineering  
Thermal Energy  
Systems Analysis

Description
Presentation at 'International Conference on Smart Energy Systems and 4th Generation District Heating', Copenhagen, 25-26 August 2015  
Documents:  
Smart Energy Systems presentation - celjo@mek.dtu.dk

Related external organisation

Unknown external organisation  
Activity: Talks and presentations › Conference presentations
Gaze interaction with textual user interface
Period: 21 Aug 2015
John Paulin Hansen (Lecturer)
Copenhagen Center for Health Technology
Department of Management Engineering
Technology and Innovation Management

Description
This presentation suggests using rapid serial visual presentation (RSVP) of single Words for prompting command options that may be executed by gaze-strokes. In a study with 27 participants the RSVP commands would engage a near-by display; adjust the speed of Word presentation; and provide a “back” option for text navigation. People readily understood how to execute RSVP command prompts and a majority of them preferred gaze input to a pen pointer. We present the concept of a smartwatch that can track eye movements and mediate command options whenever in proximity of intelligent devices that it connects with, i.e. a Gaze-Watch. For instance, standing next to a monitor, it may suggest to turn it on, if you look up at the monitor now. Command suggestions are provided in the RSVP-format, but they only stay active for a limited time, in which the gaze should be moved to apply them.

Related event
ECEM2015: European Conference on Eye Movements
16/08/2015 → 21/08/2015
Vienna, Austria
Activity: Talks and presentations › Conference presentations

"Robert Schefer Memorial Best Paper Award" for ICHS2015 (External organisation)
Frank Markert (Member)
Department of Management Engineering
Production and Service Management
Risk Research Group
Implementation and Performance Management

Description
participation in the Best paper Award committee
Degree of recognition: International

Related external organisation
"Robert Schefer Memorial Best Paper Award" for ICHS2015
Activity: Membership › Membership in review committee

When wind farms cause cancer – the public risk perception of technology and engineering megaprojects
Period: 14 Aug 2015
Josef Oehmen (Invited speaker)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Lecture and Discussion Session

Related event
University of Twente CuriousU Summer School: University for Curious People
11/08/2015 → 18/08/2015
Twente, Netherlands
Value co-creation: Ad hoc process or dynamic commitment?
Period: 12 Aug 2015
Giulia Nardelli (Invited speaker)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Presentation at Center for Facilities Management Research Forum
Degree of recognition: Local

Related organisation

Value co-creation: Ad hoc process or dynamic commitment?
Nardelli, G. (Invited speaker)
12 Aug 2015
Activity: Talks and presentations › Conference presentations

19th Triennial Congress of the International Ergonomics Association
Christine Ipsen (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Presenter at the 19th Triennial Congress of the International Ergonomics Association. "Management across distances – how to ensure performance and employee wellbeing"
Links:
http://iea2015.org/

Related event
19th Triennial Congress of the International Ergonomics Association
08/08/2015 → 14/08/2015
Melbourne, Australia
Activity: Talks and presentations › Conference presentations

Assisting Sao Tome and Principe in Formulating its Intended Nationally Determined Contribution to the Paris Agreement
FEDERICO ANTONIO CANU (Invited speaker)
Department of Management Engineering
UNEP DTU Partnership

Related event
Assisting Sao Tome and Principe in Formulating its Intended Nationally Determined Contribution to the Paris Agreement
07/08/2015 → 14/08/2015
Sao Tome, Sao Tomé og Principe
Activity: Talks and presentations › Conference presentations
Interventions in Organisations
Period: 7 Aug 2015
Christine Ipsen (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Productivity and well-being in SMEs – enablers and barriers for implementing preventive changes’

Related event
Interventions in Organisations: Planning, Implementing and Evaluating
07/08/2015 → …
Melbourne, Australia
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

PhD seminar - How to supervise your supervisor
Period: 6 Aug 2015
Christine Ipsen (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event
PhD seminar - How to supervise your supervisor
06/08/2015 → …
Melbourne, Australia
Activity: Talks and presentations › Conference presentations

Deakin University
Christine Ipsen (Visiting researcher)
Production and Service Management
Implementation and Performance Management
Department of Management Engineering

Description
Exchanging research ideas and future collaboration incl. planning a special issue
Activity: Visiting an external institution › Visiting another research institution

Deakin University
Christine Ipsen (Visiting researcher)
Production and Service Management
Implementation and Performance Management
Department of Management Engineering
Management Science

Description
Research stay at Deakin University. Exchanging research and project ideas
Activity: Visiting an external institution › Visiting another research institution
Environmental Science & Policy (Journal)
Period: 1 Aug 2015 → 31 Dec 2017
Ulrich Elmer Hansen (Editor)
Ivan Nygaard (Editor)
Henny Romijn (Editor)
Anna Wieczorek (Editor)
Linda M. Kamp (Editor)
Laurens Klerkx (Editor)
Department of Management Engineering
UNEP DTU Partnership

Description
Special issue on sustainability transitions in developing countries
Degree of recognition: International
Links:
https://doi.org/10.1016/j.envsci.2017.11.009

Related journal
Environmental Science & Policy
1462-9011
Web of Science (2018): Indexed yes
Central database
Activity: Research › Journal editor

SNF - reviewing research applications (External organisation)
Period: 1 Aug 2015 → …
Christine Ipsen (Member)
Department of Management Engineering
Management Science
Production and Service Management
Implementation and Performance Management

Description
Reviewing research applications - Swiss National Science Foundation
Degree of recognition: International

Related external organisation
SNF - reviewing research applications
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Programme Committee Chair for ICED17 21st International Conference on Engineering Design (External organisation)
Period: 30 Jul 2015 → 25 Aug 2017
Anja Maier (Chairman)
Department of Management Engineering
Engineering Systems
Copenhagen Center for Health Technology

Description
ICED17 21st International Conference on Engineering Design
Body type: Scientific Programme Committee
Degree of recognition: International
Programme Committee Chair for ICED17 21st International Conference on Engineering Design
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

20th International Conference on Engineering Design
Period: 27 Jul 2015
Josef Oehmen (Organizer)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Organization of annual Design Society Risk SIG workshop

Risk SIG Workshop

Related event

20th International Conference on Engineering Design: Design for Life
27/07/2015 → 31/07/2015
Milan, Italy
Activity: Attending an event › Participating in or organising a conference

Anja Maier (Speaker)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Links:
http://iced15.org

Related event

Mesoscopic modelling of on-street public transport
Period: 22 Jul 2015
Jesper Bláfoss Ingvardson (Guest lecturer)
Department of Management Engineering
Transport DTU
Transport Modelling
Degree of recognition: International

Related event

13th Conference on Advanced Systems in Public Transport
19/07/2015 → 23/07/2015
Modeling Liner Shipping Service Selection and Container Flows using a Multi-layer Network

Period: 12 Jul 2015 → 15 Jul 2015
Christian Vad Karsten (Invited speaker)
Department of Management Engineering
Management Science

Description
The Technical University of Denmark, in cooperation with multiple partners, has commenced a large scale research project, entitled "IPTOP", concerning the scheduling and integration of transport in the Copenhagen metropolitan area. A key task in this research is to investigate the connections between transit services (vehicles) and the timetabling of a very large network where a large proportion of travelers make one or more connections as part of their journey. Many of these connections are between bus and rail services, which have very different delay distributions and network correlations. This presentation reviews the project goals and the tools available for simulation of rail and bus services. The final tool selections for IPTOP will be revealed along with the rationale for their selection. The presentation will conclude with a discussion of whether the rail and bus networks will be simulated individually or simultaneously. Some preliminary delay data characteristics will also be discussed in the presentation.

Degree of recognition: International
Links:
https://euro2015.euro-online.org/ (Conference homepage)
https://www.euro-online.org/media_site/reports/EURO27_AB.pdf (Book of abstracts)
8th Conference of the International Society for Industrial Ecology
Period: 7 Jul 2015 → 10 Jul 2015
Benjamin Paul Goldstein (Speaker)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Presented Poster: Quantifying Urban Foodprints and Mitigation Opportunities
Documents:
Quantifying Urban Foodprints and Mitigation Opportunities

Related event
8th Conference of the International Society for Industrial Ecology
07/07/2015 → 10/07/2015
Guildford, United Kingdom
Activity: Talks and presentations › Conference presentations

Design Processes and Constructive Ergonomics
Period: 1 Jul 2015
Ole Broberg (Invited speaker)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Related event
European Conference on Cognitive Ergonomics
01/07/2015 → 03/07/2015
Warsaw, Poland
Activity: Talks and presentations › Conference presentations

Danish Operations Research Society (DORS) (External organisation)
Period: Jun 2015 → …
Niels-Christian Fink Bagger (Secretary)
Department of Management Engineering
Management Science

Related external organisation
Danish Operations Research Society (DORS)
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Ergonomic value-stream mapping and relational coordination
Period: 25 Jun 2015
Kasper Edwards (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Samarbejdsmøde på Juliane Marie Centret - Rigshospitalet

Related external organisation
**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**7th International Process Symposium (PROS) 2015**
Giulia Nardelli (Participant)
Department of Management Engineering
Production and Service Management
Centre for Facilities Management
Implementation and Performance Management

**Description**

**Related event**
**7th International Process Symposium (PROS) 2015: Workshop on Theorizing Process**
24/06/2015 → 27/06/2015
Helena Resort, Kos, Greece
Activity: Attending an event › Participating in or organising a conference

**China's energy revolution – measuring the status quo, modelling regional dynamics & assessing global impacts**
Period: 24 Jun 2015
Peggy Mischke (Lecturer)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

**Description**
PhD defense, Peggy Mischke, 24 June 2015
Links:
https://www.youtube.com/watch?v=gzg5gHdANCg

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**UIIN University-Industry Interaction 06/2015**
Period: 24 Jun 2015 → 26 Jun 2015
Karen Murdock (Participant)
Department of Management Engineering
Technology and Innovation Management

**Description**
Academic paper presentation

**Related event**
**UIIN University-Industry Interaction 06/2015**
24/06/2015 → 26/06/2015
Berlin, Germany
Activity: Attending an event › Participating in or organising a conference
**Wissensdynamik in den Technikwissenschaften (External organisation)**
Anja Maier (Participant)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

**Description**
Reviewer for German Research Foundation / Deutsche Forschungsgemeinschaft (DFG)
Degree of recognition: International
Links:
http://www.dfg.de/en/ (German Research Foundation/Deutsche Forschungsgemeinschaft (DFG))

**Related external organisation**

**Wissensdynamik in den Technikwissenschaften**
Activity: Membership › Membership in review committee

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**Climate Knowledge Brokers Workshop**
Aristeidis Tsakiris (Participant)
Department of Management Engineering
UNEP DTU Partnership
Documents:
CKB Workshop 2015 Report
Links:
http://www.climateknowledgebrokers.net/event/2015-ckb-outreach-event/

**Related event**

**Climate Knowledge Brokers Workshop**
23/06/2015 → 25/06/2015
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

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**Regional Capacity Building Workshops for Technology Needs Assessment (TNA) project, Prioritization of technologies**
Period: 22 Jun 2015 → 26 Jun 2015
Ivan Nygaard (Lecturer)
Department of Management Engineering
UNEP DTU Partnership
Links:

**Related event**

**Regional Capacity Building Workshops for Technology Needs Assessment (TNA) project. Prioritization of technologies**
22/06/2015 → 26/06/2015
Dakar, Senegal
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

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**The keys to success: Engineering your Business Model for international markets**
Period: 22 Jun 2015
Francesco Rosati (Speaker)
Department of Management Engineering
In this workshop, we introduced how our DTU task force can help you to develop, innovate and engineer your business model, helping you to make a fundamental difference in your business in international markets. We also demonstrated how we work with Danish SMEs in this regard by having the CEO and CSO of BluSense Diagnostics, one of our case companies, to demonstrate their experience of working with us to develop their business model.

Documents:
Invitation june 2015-2

**Related event**

**The keys to success: Engineering your Business Model for international markets**
22/06/2015 → 22/06/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

**Design Computing and Cognition**
Claus L. Cramer-Petersen (Participant)
Department of Management Engineering
Technology and Innovation Management

Description
Participation in Design Computing and Cognition 2014 conference
Documents:
An Experimental Study of Reasoning in Design: Testing the Pattern of Reasoning in Conceptual Design

Related event

**Design Computing and Cognition: Bringing artificial intelligence, cognitive science and computational theories to design research**
21/06/2014 → 25/06/2014
London, United Kingdom
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**ITEA**
Period: 18 Jun 2015
Mogens Fosgerau (Speaker)
Transport policy and behaviour
Department of Management Engineering

Related event

**10th ITEA Summer School**
15/06/2015 → 17/06/2015
Oslo, Norway
Activity: Talks and presentations › Conference presentations

**DTU OM-Forum**
Period: 17 Jun 2015
Kasper Edwards (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Documents:**
2015 DTU OM-forum juni KPI

**Related event**

**DTU OM-Forum**
17/06/2015 → 17/11/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

**Performance management systemer og KPI’er**
Period: 17 Jun 2015
Kasper Edwards (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Documents:**
2015 DTU OM-forum juni

**Related event**

**Performance management systemer og KPI’er : Implementering og drift**
17/06/2015 → …
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

**Performance management systemet og KPI’er skaber rammerne for samarbejdet**
Period: 17 Jun 2015
Kasper Edwards (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Description**
Oplæg på DTU OM-Forum 17. juni 2015

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**ITEA**
Period: 16 Jun 2015
Mogens Fosgerau (Guest lecturer)
Transport policy and behaviour
Department of Management Engineering

**Description**
ITEA

**Related event**

**10th ITEA Summer School**
15/06/2015 → 17/06/2015
Oslo, Norway
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities
Towards an equitable low carbon development: a science policy dialog for COP21
Subash Dhar (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Towards an equitable low carbon development: a science policy dialog for COP21
Documents:
Presentation Day2 - Dhar Shukla
Links:

Related event
Towards an equitable low carbon development: a science policy dialog for COP21
15/06/2015 → 16/06/2015
Paris, France
Activity: Talks and presentations › Conference presentations

26th ISPIM Innovation Conference
Karen Murdock (Participant)
Department of Management Engineering
Technology and Innovation Management

Description
Academic paper presentation

Related event
26th ISPIM Innovation Conference: Shaping the Frontiers of Innovation Management
14/06/2015 → 17/06/2015
Budapest, Hungary
Activity: Attending an event › Participating in or organising a conference

Thue og monopolet om ledereskvalitet og arbejdsmiljø
Period: 13 Jun 2015
Kasper Edwards (Panel member)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description

Related event
Folkemøde
2015 Annual Conference of the EU-SPRI Forum
Period: 10 Jun 2015 → 12 Jun 2015
Per Dannemand Andersen (Speaker)
Department of Management Engineering
Technology and Innovation Management

Description
The 2015 Annual Conference of the EU-SPRI Forum. Innovation policies for economic and social transitions: Developing strategies for knowledge, practices and organizations
Documents:
LEARNING FROM DEMONSTRATION PROJECTS IN SUSTAINABLE ENERGY AND TRANSPORT

Related event
2015 Annual Conference of the EU-SPRI Forum: Innovation policies for economic and social transitions: Developing strategies for knowledge, practices and organizations
10/06/2015 → 12/06/2015
Helsinki, Finland
Activity: Talks and presentations › Conference presentations

Summer school on dynamic discrete choice
Period: 10 Jun 2015
Mogens Fosgerau (Keynote speaker)
Transport policy and behaviour
Department of Management Engineering

Related event
Summer school on dynamic discrete choice
08/06/2015 → 12/06/2015
Montreal, Canada
Activity: Talks and presentations › Conference presentations

Babson College Entrepreneurship Research Conference
Period: 9 Jun 2015 → 14 Jun 2015
Carina Lomberg (Speaker)
Department of Management Engineering
Technology and Innovation Management

Description
Paper presentation: Different Strokes for Different Folks – A Self-Regulation Perspective on Idea Generation

Related event
Babson College Entrepreneurship Research Conference
09/06/2015 → 13/06/2015
Boston, United States
Activity: Talks and presentations › Conference presentations

Babson College Entrepreneurship Research Conference
Period: 9 Jun 2015 → 13 Jun 2015
Carina Lomberg (Speaker)
Department of Management Engineering
Technology and Innovation Management

**Description**

Paper Presentation: Human Capital and Nascent Entrepreneurship - The Opportunity Cost of a New Job

**Related event**

Babson College Entrepreneurship Research Conference
09/06/2015 → 13/06/2015
Boston, United States
Activity: Talks and presentations › Conference presentations

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**Energi i planlægningen**

Period: 9 Jun 2015
Per Sieverts Nielsen (Lecturer)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

**Documents:**

By og trafikplanlægning DTU Transport kursus v1

**Related external organisation**

Unknown external organisation
Activity: Talks and presentations › Conference presentations

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**Stochastic and dynamic city logistics**

Period: 8 Jun 2015
Rune Larsen (Speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

**Related event**

VeRoLog 2015: The fourth meeting of the EURO Working Group on Vehicle Routing and Logistics Optimization
08/06/2015 → 10/06/2015
Vienna, Austria
Activity: Talks and presentations › Conference presentations

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**Smart City Conference and Exhibition in Amsterdam 2015**

Period: 2 Jun 2015 → 5 Jun 2015
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

**Description**

Smart City Conference and Exhibition in Amsterdam 2015

**Related event**

Smart City Conference and Exhibition in Amsterdam 2015
02/06/2015 → 05/06/2015
Amsterdam, Netherlands
Danish ERFA group FP1404
Period: 1 Jun 2015 → …
Frank Markert (Organizer)
Department of Management Engineering
Production and Service Management
Risk Research Group
Implementation and Performance Management

Description
Danish ERFA Group in connection with Cost action FP 1404 Fire safe use of bio-based Building products

Related event

Danish ERFA group FP1404
01/06/2015 → …
Denmark
Activity: Attending an event › Participating in or organising a conference

OptALI Industry Day
Period: 1 Jun 2015 → 2 Jun 2015
Jesper Larsen (Organizer)
Department of Management Engineering
Management Science

Description
Chair of the organisation of the OptALI Industry Days here at DTU

Related event

OptALI Industry Day
01/06/2015 → 02/06/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Planning and scheduling in the food industry
Period: 1 Jun 2015
Zaza Nadja Lee Herbert-Hansen (Speaker)
Department of Management Engineering
Management Science

Description
Presentation

Related event

OptALI Industry Day
01/06/2015 → 02/06/2015
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

NAVAL - Nordic seminar 2015
Period: May 2015
Mette Møller (Speaker)
Department of Transport
Transport policy and behaviour

Related event

**NAVAL - Nordic seminar 2015**  
28/05/2015 → 29/05/2015  
Copenhagen, Denmark  
Activity: Talks and presentations › Conference presentations

**Methodological challenges in studying interdisciplinary collaboration through patient safety**  
Period: 29 May 2015  
Angelos Balatsas Lekkas (Speaker)  
Department of Management Engineering  
Technology and Innovation Management

**Description**  
Presentation  
Documents: Program

Related event

**2nd Nordic Science and Technology Studies Conference**  
27/05/2015 → 29/05/2015  
Copenhagen, Denmark  
Activity: Talks and presentations › Conference presentations

**Gå-hjem-møde om Facilities Management og innovation**  
Period: 28 May 2015  
Giulia Nardelli (Organizer)  
Department of Management Engineering  
Production and Service Management  
Implementation and Performance Management  
Centre for Facilities Management

**Description**  
Workshop on FM and Innovation with practitioners and researchers, consisting of a combination of practice and research presentation, as well as a reflective exercise.

Organisation of and presentation at Gå-hjem-møde om FM og Innovation.  
Documents: Gå-hjem-møde om FM og Innovation-Invitation and programme

Related event

**Gå-hjem-møde om Facilities Management og innovation**  
28/05/2015 → …  
Kgs. Lyngby, Denmark  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Side event: The CDM Sustainable Development Tool – Assessment and Options for Improvement**  
Period: 27 May 2015  
Karen Holm Olsen (Invited speaker)  
Department of Management Engineering  
UNEP DTU Partnership

**Description**
Presentation of results of a research project on the CDM SD tool commissioned by the German Emissions Trading Authority

Documents:
Carbon Expo_SD Tool complete

Related event

Carbon Expo : Global Carbon Market Fair & Conference
26/05/2015 → 28/05/2015
Barcelona, Spain
Activity: Talks and presentations › Conference presentations

ACCIDENT MANAGEMENT AND OPERATION
Period: 21 May 2015
Igor Kozin (Participant)
Department of Management Engineering
Production and Service Management
Engineering Systems Group
Risk Research Group

Description
Contributed to making up a research agenda for the Halden Reactor Project

It was the Halden Reactor Project workshop "ACCIDENT MANAGEMENT AND OPERATION" held 0n 20-21 May in Halden, Norway.

Related event

ACCIDENT MANAGEMENT AND OPERATION
20/05/2015 → 21/05/2015
Halden, Norway
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

OECD Halden Reactor Project
Anja Maier (Participant)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Related event

OECD Halden Reactor Project 2015
20/05/2015 → 21/05/2015
Halden, Norway
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Performance management: You get what you want – but do you want what you get?
Period: 20 May 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
IMOP Executive program in Bologna
Systematic employee participation in designing improved work processes
Period: 20 May 2015
Liv Starheim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event
European Association og Work and Organisational Psychology: Respectful and effective leadership - managing people and organizations in turbulent times
20/05/2015 → 23/05/2015
Oslo, Norway
Activity: Talks and presentations › Conference presentations

Integration of energy systems in the CITIES project
Period: 19 May 2015
Per Sieverts Nielsen (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities
Documents:
DTU Water CITIES v2

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

European Climate Change Adaptation Conference 2015
Period: 14 May 2015
Catharina Wolff von Bülow (Participant)
DTU Climate Centre
Department of Management Engineering
Systems Analysis

Description
Poster

Related event
European Climate Change Adaptation Conference 2015
12/05/2015 → 14/05/2015
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Barrier analysis and enabling frameworks
Period: 12 May 2015 → 13 May 2017
Ivan Nygaard (Speaker)
Description
Barrier analysis and enabling frameworks, Presentation at TNA internal capacity building workshop, UN-CITY, Copenhagen, May 12-13, 2015
Documents:
Presentation barrier analysis and enabling framework c

Related event

Internal capacity building workshop for Technology Needs Assessment (TNA) project
12/05/2015 → 13/05/2015
Copenhagen, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

11th International Conference on Occupational Stress and Health: Work, Stress & Health 2015
Period: 7 May 2015
Christine Ipsen (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Knowledge Sharing Symposium

Related event

11th International Conference on Occupational Stress and Health: Work, Stress & Health 2015: Sustainable Work, Sustainable Health, Sustainable Organizations
06/05/2015 → 09/05/2015
Atlanta, United States
Activity: Attending an event › Participating in or organising a conference

11th International Conference on Occupational Stress and Health: Work, Stress & Health 2015
Period: 7 May 2015
Christine Ipsen (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Knowledge transfer in participatory interventions - tools and methods

Related event

11th International Conference on Occupational Stress and Health: Work, Stress & Health 2015: Sustainable Work, Sustainable Health, Sustainable Organizations
06/05/2015 → 09/05/2015
Atlanta, United States
Activity: Talks and presentations › Conference presentations

Analyzing interventions – Are your conclusions out of context?
Period: 7 May 2015
Kasper Edwards (Speaker)
Department of Management Engineering
Network meeting in the International Network of Sustainable Interventions (External organisation)

**Period:** 7 May 2015

Christine Ipsen (Participant)

Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Management Science

**Description**
In Atlanta, USA - coordinating new research activities and collaboration

**Related external organisation**

**Network meeting in the International Network of Sustainable Interventions**

Activity: Membership › Membership of research networks or expert groups

3rd Scandinavian Academy of Industrial Engineering and Management (ScAIEM) Conference

**Period:** 1 May 2015 → 30 Nov 2015

Christine Ipsen (Organizer)

Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Description**
Organizing the conference

Organizing the Scandinavian Academy of Industrial Engineering and Management Conference 2015

**Links:**
http://www.scaiem.org

**Related event**

3rd Scandinavian Conference Industrial Engineering and Management

18/11/2015 → 20/11/2015

Lyngby, Denmark

Activity: Attending an event › Participating in or organising a conference

Requirements Identification and Cost Reduction

**Period:** 27 Apr 2015

Francesco Rosati (Participant)

Department of Management Engineering
Technology and Innovation Management

**Documents:**
GODSEM - Workshop Invitation - 20150427
Related event

**Requirements Identification and Cost Reduction: An Industrial workshop under the "Global Opportunities for Danish SMEs in Emerging Markets" project**
27/04/2015 → ...
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

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**Forskningens Døgn**
Period: 23 Apr 2015
Christine Ipsen (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Activity: Other

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**Forskningens Døgn: Videnarbejde og stress - mellem begejstring og belastning**
Period: 23 Apr 2015
Christine Ipsen (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

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**Related external organisation**

**Bibliotikar Forbundet**
Frederiksberg, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

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**Systems Ergonomics in Healthcare**
Period: 23 Apr 2015
Ole Broberg (Keynote speaker)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

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**Related event**

**3rd European Conference on Bronchology and Interventional Pulmonology**
23/04/2015 → 25/04/2015
Barcelona, Spain
Activity: Talks and presentations › Conference presentations

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**Training Within Industry (TWI)**
Period: 22 Apr 2015
Kasper Edwards (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Documents:
2015 DTU OM-forum April TWI

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**Related event**
Training Within Industry (TWI): Effektiv medarbejderoplæring
22/04/2015 → …
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

NAMAcademy 2015
Period: 19 Apr 2015 → 24 Apr 2015
FEDERICO ANTONIO CANU (Organizer)

Department of Management Engineering
UNEP DTU Partnership

Description
Coordinator, organizer, presenter and coach for the event

NAMAcademy - The NAMAcademy provides focused training on practical issues when designing climate change mitigation policies and actions, and the expectations of donors and financiers, assisting in bringing the initial idea to a well-structured concept designed to approach potential financiers.

Related event
NAMAcademy 2015
19/04/2015 → 24/04/2015
Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Bedømmelse af PhD " Learning from incidents at a Scandinavian refinery
Degree of recognition: International

Related external organisation
Medlem af bedømmeseskommitte ved Stavanger Universitet for PhD Kirsti Russel Vastveit
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Lean Product and Process Development
Period: 7 Apr 2015
Kasper Edwards (Organizer)

Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Today’s innovation economy is characterized by rapid changing markets disrupting old business models, with new markets arising quickly and unexpected driven by new technology and innovations. This stresses the time-to-market and hereby the product development process. Lean Product and Process Development (LPPD) is based on Toyotas Product Development System, Set Based Concurrent Engineering and the Agile/Scrum methodology from software developers. It gives you the means and method to manage a development project - quickly, while maintaining quality and safety and taking into account cost-investment. About Boaz Tamir Dr. Boaz Tamir has extensive experience in Lean Product & Process Development (LPPD) method as several startups founder, manager and entrepreneur. In his entrepreneurial, managerial-executive roles, sensei and consultancies activities Tamir led several Lean Transformation (turn around) processes. Collaborating with Jim Morgan, (Jointly with Jeffry Liker, the author of "The Toyota Product Development System") Tamir is currently deploying the LPPD approach combing the Lean Transformation Model (LTM) method and
contributing his knowledge to some of the most successful High Tech organizations in Israel ("Startup Nation"). With extensive experience in entrepreneurship, company management and academic activity, Tamir has contributed his knowledge to the development of the business and marketing of some of Israel's most successful organizations. In his talk Tamir will examine the principles of LPPD that must guide the leader – who inspire change – as she endeavors to redesign an up-to-date Lean Management worldview.

Related event

**Lean Product and Process Development**
07/04/2015 → …
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

**Scandinavian Academy Industrial Engineering Management Board (External organisation)**
Period: 1 Apr 2015 → …
Christine Ipsen (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Degree of recognition: International
Links:
http://www.scaiem.org/

Related external organisation

**Scandinavian Academy Industrial Engineering Management Board**
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**Swiss National Science Foundation (External organisation)**
Period: 1 Apr 2015 → 1 May 2015
Christine Ipsen (Member)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Reviewing research proposal.

Body type: Swiss National Science Foundation
Degree of recognition: International

Related external organisation

**Swiss National Science Foundation**
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**British Academy of Management (BAM) Conference 2015 (Journal)**
Period: Mar 2015 → Apr 2015
Peter Bo Sarka (Reviewer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Reviewer of two papers submitted to the conference.

Related journal
British Academy of Management (BAM) Conference 2015
Local database
Activity: Research › Peer review of manuscripts

Reviewer for the EU EMAS Award ceremony 2015 (External organisation)
Period: Mar 2015 → …
Maj Munch Andersen (Participant)
Department of Management Engineering
Technology and Innovation Management
Description
Expert reviewer for the EU EMAS Award ceremony 2015
Degree of recognition: International
Related external organisation

Annual Design Society Board of Management and Advisory Board Meeting @ CERN (External organisation)
Anja Maier (Participant)
Department of Management Engineering
Production and Service Management
Engineering Systems Group
Description
CERN Geneva
Degree of recognition: International
Links:
http://home.web.cern.ch/
http://designsociety.org
Related external organisation

ECRA General Assembly 2015
Morten Andreas Dahl Larsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Related event
ECRA General Assembly 2015
25/03/2015 → 26/03/2015
Bruxelles, Belgium
Activity: Attending an event › Participating in or organising a conference

Climate Change and increasing shipping in Arctic waters
Period: 22 Mar 2015
Lauge Baungaard Rasmussen (Lecturer)
Department of Management Engineering
Management Science
Technology and Innovation Management

**Description**
Attending the World Conference "Effects of Climate Change on the World's oceans" 21-27 March, 2015 in Santos, Brazil

**Foredrag samt paper**

**Related event**

*Effects of Climate Change on the World's oceans*
21/03/2015 → 27/03/2015
Santos, Brazil
Activity: Talks and presentations › Conference presentations

**IEA HIA Danish Projects**
**Period:** 18 March 2015
Frank Markert (Invited speaker)
Department of Management Engineering
Production and Service Management
Risk Research Group
Implementation and Performance Management

**Description**
Presentation of the IEA HIA task 37 programme

**Related event**

**IEA HIA Danish Projects**
18/03/2015 → …
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

**IDA Arbejdsmiljøstudenterpris 2015**
**Period:** 17 March 2015
Rikke Seim (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Related event**

**IDA Arbejdsmiljøstudenterpris 2015**
16/03/2015 → …
København, Denmark
Activity: Attending an event › Participating in or organising a conference

**Dommere ved IDA Arbejdsmiljøstudenterprisuddeling 2015 (External organisation)**
**Period:** 16 March 2015
Kasper Edwards (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
General Introduction to Foresight  
Period: 16 Mar 2015  
Per Dannemand Andersen (Lecturer)  
Department of Management Engineering  
Technology and Innovation Management  

Description  
The aim of the lecture is to provide the participants with a basic introduction to foresight and how foresight, in our opinion, relates to other policy formulation activities and in other future-oriented policy formulation activities (e.g. technology forecasting and futures studies). Furthermore, the lecture gives a brief introduction to quantitative and qualitative foresight methods – with emphasis set on the latter – and a brief introduction to overall design of foresight processes. The lecture will focus on foresight's role in public science, technology and innovation policy.

Related event  
Lectures in Foresight Techniques  
16/03/2015 → …  
Brussels, Belgium  
Activity: Talks and presentations › Conference presentations  

Horizon Scanning  
Period: 16 Mar 2015  
Per Dannemand Andersen (Lecturer)  
Department of Management Engineering  
Technology and Innovation Management  

Description  
The aim of the lecture is to provide the participants with a basic understanding of horizon scanning as a concept as well as the main approaches and sources. Furthermore, it is the aim to provide the participants with the basic knowledge to do a scan by searching early sign or weak signals. During the exercise, the participants determine proper data sources, research questions and search strings to scan the environment of an organisation. In this context horizon scanning is understood as a technique for detecting early warning signs or weak signals of potential significant changes in the environments and assumptions underlying the operation of the organisation.

Related event  
Lectures in Foresight Techniques  
16/03/2015 → …  
Brussels, Belgium  
Activity: Talks and presentations › Conference presentations  

Lean without stress: The dangers and opportunities of lean  
Period: 12 Mar 2015  
Kasper Edwards (Invited speaker)  
Department of Management Engineering  
Production and Service Management  
Implementation and Performance Management  

Related event  
Lean Ísland 2015  
12/03/2015 → …  
Reykavik, Iceland  
Activity: Talks and presentations › Conference presentations
MADE Ph.D. konference
Period: 10 Mar 2015 → 12 Mar 2015
Christina Villefrance Møller (Organizer)
Department of Management Engineering
Management Science
Implementation and Performance Management

Related event

MADE Ph.D. konference
10/03/2015 → 12/03/2015
Rold Skov, Denmark
Activity: Attending an event › Participating in or organising a conference

Engineering Systems Ergonomics
Period: 9 Mar 2015
Christine Ipsen (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Teaching session on Engineering Systems Ergonomics about Knowledge Production systems and Distance management and work

Related event

Engineering Systems Ergonomics
02/02/2015 → 29/06/2015
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Core principles in improvements in organizations
Period: 4 Mar 2015
Kasper Edwards (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event

1st Improvements in Organizations Symposium
04/03/2015 → 05/03/2015
Stockholm, Sweden
Activity: Talks and presentations › Conference presentations

Improvements in Organizations
Period: 4 Mar 2015 → 5 Mar 2015
Christine Ipsen (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Description
Improvements in Organizations Network meeting

Related event

1st Improvements in Organizations Symposium
04/03/2015 → 05/03/2015
Stockholm, Sweden
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Improvements in Organizations
Period: 4 Mar 2015 → 5 Mar 2015
Signe Poulsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
Improvements in organizations

Related event

1st Improvements in Organizations Symposium
04/03/2015 → 05/03/2015
Stockholm, Sweden
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Improvements in Organizations
Period: 4 Mar 2015 → 5 Mar 2015
Christine Ipsen (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Presentation about interventions in knowledge Work and SMEs and what makes interventions work
Invited speaker to Improvements in Organizations Conference, Stockholm

Related event

1st Improvements in Organizations Symposium
04/03/2015 → 05/03/2015
Stockholm, Sweden
Activity: Talks and presentations › Conference presentations

Arbejdsmiljø og lean
Period: 2 Mar 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Workshop hos Arbejdsmiljørådgiverne

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

33rd International conference of the System Dynamics Society (Event)
Daniel Alberto Sepúlveda Estay (Member)
Department of Management Engineering
Management Science

Description
33rd International conference of the System Dynamics Society
Degree of recognition: International
Documents:
33rd International System Dynamics Conference Booklet 2015

Related event

33rd International conference of the System Dynamics Society
19/07/2015 → 23/07/2015
Cambridge, United States
Activity: Membership › Membership in review committee

Journal of Knowledge Management (Journal)
Period: 1 Mar 2015 → …
Christine Ipsen (Reviewer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related journal

Journal of Knowledge Management
1367-3270
Central database
Activity: Research › Peer review of manuscripts

Meeting Urban Food Needs (MUFN) UN FAO & System Dynamics Italian Chapter(SYDIC) (External organisation)
Daniel Alberto Sepúlveda Estay (Member)
Department of Management Engineering
Management Science
Degree of recognition: International

Related external organisation

Meeting Urban Food Needs (MUFN) UN FAO & System Dynamics Italian Chapter(SYDIC)
Activity: Membership › Membership in review committee

Roadmap to Nationally Appropriate Mitigation Actions in the Livestock Sector of Honduras and Nicaragua - Multi Criteria Analysis with local and national stakeholders
Period: 1 Mar 2015 → 30 Sep 2017
FEDERICO ANTONIO CANU (Organizer)
Department of Management Engineering
UNEP DTU Partnership

**Description**
Roadmap to Nationally Appropriate Mitigation Actions in the Livestock Sector of Honduras - Multi Criteria Analysis with local and national stakeholders

**Related event**
Roadmap to Nationally Appropriate Mitigation Actions in the Livestock Sector of Honduras and Nicaragua - Multi Criteria Analysis with local and national stakeholders
04/07/2016 → 07/07/2016
Honduras
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Université de Montréal**
Period: 1 Mar 2015 → 12 Jul 2015
Niels-Christian Fink Bagger (Visiting researcher)
Department of Management Engineering
Management Science

**Description**
Study Abroad at École Polytechnique
Groupe d'Études et de Recherche en Analyse des Décisions, École Polytechnique, Université de Montréal
Activity: Visiting an external institution › Visiting another research institution

**Baeredygtig FM til tiden: Bærekraftig FM på tid (Norsk)**
Period: 26 Feb 2015
Susanne Balslev Nielsen (Invited speaker)
Department of Management Engineering
Production and Service Management
Centre for Facilities Management

**Description**
Professorens bidrag til branchedagen.
Documents:
SBNI_NO_BærekraftigFMtiTiden_26022015

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**Performance management- et effektivt instrument med bivirkninger**
Period: 26 Feb 2015
Kasper Edwards (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Description**
Forelæsning på TML

**Related external organisation**
**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**KPI’er – hvad er det og hvilken effekt har de på trivsel og produktivitet**
Period: 24 Feb 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Related external organisation**
 Unknown external organisation
Activity: Talks and presentations › Conference presentations

**KPI’er og strategisk arbejdsmiljøarbejde**
Period: 24 Feb 2015
Rikke Seim (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Related event**
**KPI’er og strategisk arbejdsmiljøarbejde**
24/02/2015 → …
København, Denmark
Activity: Attending an event › Participating in or organising a conference

**Modelling scenarios for sustainable urban energy systems**
Period: 23 Feb 2015
Sara Ben Amer-Allam (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

**Related event**
**Smart Sustainable Cities Seminar at NTNU**
23/02/2015 → 24/02/2015
Trondheim, Norway
Activity: Talks and presentations › Conference presentations

**ASLO Aquatic Sciences Meeting 2015**
Period: 22 Feb 2015 → 27 Feb 2015
Nuno Miguel Dias Cosme (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

**Description**
Participation in the ASLO Aquatic Sciences Meeting 2015 in Granada, Spain

**Related event**
Project Management for Researchers
Period: 20 Feb 2015 → 30 May 2015
Riyong Kim Bakkegaard (Participant)
Department of Management Engineering
UNEP DTU Partnership

Description
Project Management for Researchers

Related event

Project Management for Researchers
02/02/2015 → 22/05/2015
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

EU Megaprojects Network
Period: 15 Feb 2015 → 21 Feb 2015
Josef Oehmen (Participant)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Short-term Scientific Mission (STSM) in the EU Megaprojects Network: Role of Systems Engineering in Megaprojects Management
Participation in EU COST Action "Megaprojects Network"

Related event

EU Megaprojects Network
15/02/2015 → 21/02/2015
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Australian Centre for Entrepreneurship Research Exchange
Period: 3 Feb 2015 → 6 Feb 2015
Carina Lomberg (Speaker)
Department of Management Engineering
Technology and Innovation Management

Description
Paper Presentation: Different Strokes for Different Folks – A Self-Regulation Perspective on Idea Generation

Related event

Australian Centre for Entrepreneurship Research Exchange
03/02/2015 → 06/02/2015
Adelaide, Australia
Activity: Talks and presentations › Conference presentations

University of Leeds
Period: 2 Feb 2015 → 31 Mar 2015
Peter Bo Sarka (Visiting researcher)
Production and Service Management
Implementation and Performance Management
Department of Management Engineering

Description
Visiting researcher at Socio-Technical Centre, Leeds University Business School, University of Leeds
Links:
http://lubswww.leeds.ac.uk/stc/home/ (Link to Socio-Technical Centre )
http://www.leeds.ac.uk/ (Link to University of Leeds)
Activity: Visiting an external institution › Visiting another research institution

10th Conference on Sustainable Development of Energy, Water and Environment Systems
Period: 1 Feb 2015
Xiufeng Liu (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Centre for IT-Intelligent Energy Systems in Cities

Related event
10th Conference on Sustainable Development of Energy, Water and Environment Systems
27/09/2015 → 02/10/2015
Dubrovnik, Croatia
Activity: Attending an event › Participating in or organising a conference

International Conference Hydrogen Safety (External organisation)
Frank Markert (Member)
Department of Management Engineering
Production and Service Management
Risk Research Group
Implementation and Performance Management

Description
Member of the Scientific committee ICHS 2015
Degree of recognition: International

Related external organisation
International Conference Hydrogen Safety
Activity: Membership › Membership in review committee

InnoDemo Afslutningsseminar
Period: 30 Jan 2015
Per Dannemand Andersen (Invited speaker)
Department of Management Engineering
Technology and Innovation Management

Description
The database of demonstration and trail projects in sustainable energy and transport in Scandinavia
InnoDemo WP2 presentation

Related event

InnoDemo Afslutningsseminar
30/01/2015 → …
Oslo, Norway
Activity: Talks and presentations › Conference presentations

Fremtidens arbejdsmiljørådgivning
Period: 27 Jan 2015
Rikke Seim (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Description
Startkonference for skrivning af "hvidbog om arbejdsmiljørådgivning"

Related event

Fremtidens arbejdsmiljørådgivning
27/01/2015 → …
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference

Lean og arbejdsmiljø
Period: 27 Jan 2015
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Description
Oplæg i HK København

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Environmental Discrete Choice Modelling Workshop
Period: 26 Jan 2015
Mogens Fosgerau (Keynote speaker)
Transport policy and behaviour
Department of Management Engineering

Related event

Environmental Discrete Choice Modelling Workshop
26/01/2015 → 27/01/2015
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Megatrends Med Mere: Center for Ledelse, Netværksmøde
Period: 16 Jan 2015
Production and Service Management
Implementation and Performance Management

Related event

CAVI Seminar
12/01/2015 → …
Denmark
Activity: Attending an event › Participating in or organising a conference

DTU Patent Course
Period: 12 Jan 2015 → 16 Jan 2015
Andrei Costache (Participant)
Department of Management Engineering
Department of Mechanical Engineering

Description
1 week, 3 ECTS concentrated course on commercialization of technology and research based inventions, including intellectual property rights, patent law, licensing principles, rules & agreements in university-industry collaboration, entrepreneurship, business formation, cases and more.

Related event

DTU Patent Course
12/01/2015 → 16/01/2015
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

American Economic Review (Journal)
Period: 1 Jan 2015 → 12 Dec 2015
Mogens Fosgerau (Reviewer)
Transport policy and behaviour
Department of Management Engineering

Related journal

American Economic Review
Local database
Activity: Research › Peer review of manuscripts

Arbejdsmiljøankenævnet (External organisation)
Period: 1 Jan 2015 → 12 Dec 2018
Kirsten Jørgensen (Participant)
Department of Management Engineering
Production and Service Management
Risk Research Group

Related external organisation

Arbejdsmiljøankenævnet
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ITEA Scientific Committee (External organisation)
Period: 1 Jan 2015 → …
Mogens Fosgerau (Participant)
Transport policy and behaviour
Department of Management Engineering
Degree of recognition: International

Related external organisation

ITEA Scientific Committee
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

PhD Committee for Construction, Production, Building and Transport (KPBT) (External organisation)
Period: 1 Jan 2015 → 31 Dec 2015
Nuno Miguel Dias Cosme (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Member of the PhD Committee for Construction, Production, Building and Transport

Body type: Education

Related external organisation

PhD Committee for Construction, Production, Building and Transport (KPBT)
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Proceedings of the IEA conference (Journal)
Period: 1 Jan 2015 → 1 Mar 2015
Christine Ipsen (Reviewer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related journal

Proceedings of the IEA conference
Local database
Activity: Research › Peer review of manuscripts

Quantitative Economics (Journal)
Period: 1 Jan 2015
Mogens Fosgerau (Reviewer)
Transport policy and behaviour
Department of Management Engineering

Related journal

Quantitative Economics
Local database
Activity: Research › Peer review of manuscripts

Study board at DTU Management Engineering (External organisation)
Period: 1 Jan 2015 → …
Christian Thuesen (Chairman)
Department of Management Engineering

Related external organisation

Study board at DTU Management Engineering
**3rd Symposium of the European Association for Research in Transportation**

*Period: 2014*

**Katrine Hjorth (Participant)**

**Department of Transport**

**Transport policy and behaviour**

**Description**

Presentation of paper

**Related event**

**3rd Symposium of the European Association for Research in Transportation**

10/09/2014 → 12/09/2014
Leeds, United Kingdom

**Activity: Attending an event › Participating in or organising a conference**

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**9th Kuhmo-Nectar Summer School. Toulouse School of Economics, Toulouse, France**

*Period: 2014*

**Mogens Fosgerau (Lecturer)**

**Transport policy and behaviour**

**Department of Management Engineering**

**Related external organisation**

**Unknown external organisation**

**Activity: Talks and presentations › Conference presentations**

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**Arbejdsgruppe for udarbejdelse af undervisningsplan for Alkohol, Narkotika og Trafik kursus (ANT) (External organisation)**

*Period: 2014*

**Mette Møller (Participant)**

**Department of Transport**

**Transport policy and behaviour**

**Related external organisation**

**Arbejdsgruppe for udarbejdelse af undervisningsplan for Alkohol, Narkotika og Trafik kursus (ANT)**

**Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar**

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**CAVI styregruppe (External organisation)**

*Period: 2014 → 2016*

**Rikke Seim (Participant)**

**Department of Management Engineering**

**Production and Service Management**

**Implementation and Performance Management**

**Description**

Styregruppe for CAVI

**Related external organisation**

**CAVI styregruppe**

**Activity: Membership › Membership of research networks or expert groups**
CEAR workshop on traffic risk, Sydney, Australia (invited)
Period: 2014
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering

Description
CEAR workshop on traffic risk, Sydney, Australia (invited)

Related event
CEAR workshop on traffic risk, Sydney, Australia (invited)
01/01/2014 → 01/01/2014
Sydney, Australia
Activity: Talks and presentations › Conference presentations

Editorial Board, Journal of Urban Economics (External organisation)
Period: 2014 → …
Mogens Fosgerau (Participant)
Transport policy and behaviour
Department of Management Engineering
Degree of recognition: International

Related external organisation
Editorial Board, Journal of Urban Economics
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

EERA e3s (External organisation)
Period: 2014 → …
Jay Sterling Gregg (Participant)
Department of Management Engineering
Systems Analysis

Description
I represent DTU in this alliance. I vote at executive meetings, shape future research priorities, present our research activities, and form consortia for project proposals.

Body type: Research Alliance
Degree of recognition: International

Related external organisation
EERA e3s
Activity: Membership › Membership of research networks or expert groups

El-cykel netværket (External organisation)
Period: 2014 → …
Mette Møller (Participant)
Department of Transport
Transport policy and behaviour

Related external organisation
El-cykel netværket
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar
External Examiner of postgraduate master program in Facility Management
Period: 2014 → …
Per Anker Jensen (External examiner)
Department of Management Engineering
Management Science
Implementation and Performance Management
Description
External Examiner of postgraduate master program in Facility Management as part of RICS certification
Degree of recognition: International
Activity: Examinations and supervision › External examination

FM Innovation in Science and Practice
Period: 2014 → 2015
Giulia Nardelli (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Centre for Facilities Management
Description
Co-chair of and invited speaker at the FM Innovation Session of EFMC 2015.
Organisation of and participation in session on FM Innovation at EFMC 2015.
Documents:
FM Innovation in Science and Practice-White paper

Related event
European Facility Management Conference 2015
01/06/2015 → 03/06/2015
Glasgow, United Kingdom
Activity: Talks and presentations › Conference presentations

Innovation and Added Value in FM
Period: 2014 → 2017
Giulia Nardelli (Guest lecturer)
Department of Management Engineering
Management Science
Implementation and Performance Management
Description
Guest lecture in Facilities Management course
Degree of recognition: Local

Related organisation
Innovation and Added Value in FM
Nardelli, G. (Guest lecturer)
2014 → 2017
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

International Food and Agribusiness Management Review (Journal)
Period: 2014 → …
Arne Wangel (Reviewer)
The International Food and Agribusiness Management Review (IFAMR) publishes high quality, peer reviewed, scholarly articles on topics related to the practice of management in the food and agribusiness industry. The Journal provides managers, researchers and teachers a forum where they can publish and acquire research results, new ideas, applications of new knowledge, and discussions of issues important to the worldwide food and agribusiness system. The Review is published electronically on this website. The core values of the Review are as follows: excellent academic contributions; fast, thorough, and detailed peer reviews; building human capital through the development of good writing skills in scholars and students; broad international representation among authors, editors, and reviewers; a showcase for IFAMA’s unique industry-scholar relationship, and a facilitator of international debate, networking, and research in agribusiness. The Review welcomes scholarly articles on business, public policy, law and education pertaining to the global food system. Articles may be applied or theoretical, but must relevant to managers or management scholars studies, industry interviews, and book reviews are also welcome. The Review also reflects agribusiness scholarship world-wide with over half of its Editorial Board, Managing Editors, and article submissions coming from outside the United States.

**Related journal**

**International Food and Agribusiness Management Review**
1559-2448
Scopus rating (2016): CiteScore 0.75 SJR 0.311 SNIP 0.963, Web of Science (2018): Indexed yes
Indexed in DOAJ
Local database
Activity: Research › Peer review of manuscripts

**IRENA (Publisher)**
Period: 2014 → …
Peggy Mischke (Reviewer)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

**Description**
External expert review - IRENA China renewable energy outlook: REmap 2030 China country study
Documents:
IRENA REmap 2030 China country study

**Related Publisher**

**IRENA**
Local database
Activity: Research › Peer review of manuscripts

**Journal of Urban Economics (Journal)**
Period: 2014 → …
Mogens Fosgerau (Reviewer)
Transport policy and behaviour
Department of Management Engineering

**Related journal**

**Journal of Urban Economics**
0094-1190
Central database
Activity: Research › Peer review of manuscripts
Key variables of organisation design in servitization

Period: 2014
Melanie Kreye (Lecturer)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Manufacturing companies offering additional service with their products need to change their organisation design to accommodate for the service business. Using the star model, this paper investigates organisation design in terms of strategy, structure, processes, rewards and people as a response to external environment to ensure performance. We present a case in the European renewable energy sector. The findings show three key variables: (i) processes need to enable information flow between business departments; (ii) servitization strategy needs to be translated into service-centred activities, and (iii) the parts of organisation design need to be aligned to prevent inconsistencies in service provision.

Related event
21st EurOMA Conference: Operations Management in an Innovation Economy
20/06/2014 → 25/06/2014
Palermo, Italy
Activity: Talks and presentations › Conference presentations

Nordisk Vej Forum (NVF) (External organisation)
Mette Møller (Participant)
Department of Transport
Transport policy and behaviour
Degree of recognition: International

Related external organisation
Nordisk Vej Forum (NVF)
Activity: Membership › Membership of commitees, commissions, boards, councils, associations, organisations, or similar

Online Tutorial : Loop Eigenvalue Elasticity Analysis of System Dynamics Models
Period: 2014 → …
Daniel Alberto Sepúlveda Estay (Participant)
Department of Management Engineering
Management Science
Transport DTU
Operations Management

Description
System Dynamics models are composed of different flow and state variables, with multiple interactions. In the process of identifying the relevant structure that leads to the observed behavior, the method of "Loop Eigenvalue Elasticity Analysis" (LEEA) can be very useful in quickly identifying the modes loops most relevant over time for this behavior.

The method was originally proposed by Kampmann and Oliva in 2006. This video is a tutorial that shows the implementation of such method when applied to a specific example.

The video first discusses the theory behind the analysis, then describes step by step the process of data gathering and processing, to finally describe the analysis of results.

In order to reproduce what is shown in the video, both VENSIM and Mathematica software packages are required.
Degree of recognition: International
Links:
https://www.youtube.com/watch?v=6eGmJKzPFYo (Tutorial about Loop Eigenvalue Elasticity Analysis (LEEA))

Activity: Other

Period: 2014 → …
Arne Wangel (Reviewer)
Department of Management Engineering
Quantitative Sustainability Assessment

**Related journal**
Local database
Activity: Research › Peer review of manuscripts

**The first Nordic meeting on transport economics**
Period: 2014
Katrine Hjorth (Participant)
Department of Transport
Transport policy and behaviour

**Description**
Presentation of paper

**Related event**
**The first Nordic meeting on transport economics**
Oslo, Norway
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Traffic Injury Prevention (Journal)**
Period: 2014 → …
Mette Møller (Reviewer)
Department of Transport
Transport policy and behaviour

**Related journal**
**Traffic Injury Prevention**
1538-9588
Central database
Activity: Research › Peer review of manuscripts

**VidenDanmark (External organisation)**
Period: 2014 → …
Peter Bo Sarka (Participant)
Implementation and Performance Management
Department of Management Engineering
Production and Service Management

**Description**
VidenDanmark (in English: KnowlegdeDenmark) is a network where the aim is to facilitate the network, find inspiring news and create developing events. VidenDanmark was founded in 2004 by Bent Schou and the network is now owned and
administered by Inger Toft Thierson.

Inger Toft Thierson is a Knowledge Manager, project leader and facilitator with years of experience within knowledge Management, Lean Knowledge og Change Management in knowledge companies.

In 2009 she created the consultancy Viden Assistance (in English: Knowledge Assistance) and she is originally trained as a lawyer.

Body type: Network
Links:
http://www.videndanmark.dk/about-videndanmark

Related external organisation

VidenDanmark
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Tænketank om grænser for ledelse (External organisation)
Period: Dec 2014 → Dec 2015
Kasper Edwards (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Tænketank dannet af Lederne

Related external organisation

Tænketank om grænser for ledelse
Activity: Membership › Membership in review committee

A collaborative quest for sustainability at DTU
Period: 17 Dec 2014
Susanne Balslev Nielsen (Lecturer)
Department of Management Engineering
Production and Service Management
Centre for Facilities Management

Description
Co-lecturers was Lisbet Michaelsen, sustainability coordinator at DTU Campus Service and Stig Irving Olsen, DTU Management Engineering

Related event

DTU Sustain Conference 2014
17/12/2014 → 17/12/2014
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

DTU Sustain Conference 2014
Period: 17 Dec 2014
Anne Nygaard Tanner (Participant)
Department of Management Engineering
Technology and Innovation Management

Description
Poster presentation
Sustain DTU Conference: Creating Technology for a Sustainable Society
Documents:
Local and global knowledge sourcing_16122014

Related event

DTU Sustain Conference 2014
17/12/2014 → 17/12/2014
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

DTU Sustain Conference 2014
Period: 17 Dec 2014
Nuno Miguel Dias Cosme (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Participation in the DTU Sustain Conference 2014 in Lyngby, Denmark

Related event

DTU Sustain Conference 2014
17/12/2014 → 17/12/2014
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

DTU Sustain Conference 2014
Period: 17 Dec 2014
Francesco Rosati (Participant)
Department of Management Engineering
Technology and Innovation Management

Description
Sustain DTU Conference - Creating Technology for a Sustainable Society

Related event

DTU Sustain Conference 2014
17/12/2014 → 17/12/2014
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

KPI'er, performance og adfærd
Period: 17 Dec 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Region H projekt om udvikling af arbejdsmiljøindikatorer i effektriviseringsprojekter

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations
**Brobyggeren: Portrait Article in Renholdsnytt**

*Period: 15 Dec 2014*
*Susanne Balslev Nielsen (Participant)*

**Description**
Article in Renholdsnytt, nr 6, 2014

**Documents:**
Brobyggeren_dec2014

**Related external organisation**

*Norsk FM magazine*
Norway
*Activity: Other*

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**Climate change adaptation in relation to land use in tropical and sub-tropical ecosystems**

*Period: 10 Dec 2014*
*Riyong Kim Bakkegaard (Lecturer)*

**Description**
For Climate Change and Land Use Masters Course- a three hour morning session was presented and facilitated by Sara Trærup and myself.

**Related external organisation**

*Unknown external organisation*
*Activity: Talks and presentations › Conference presentations*

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**Interne sociale medier**

*Period: 10 Dec 2014*
*Peter Bo Sarka (Participant)*

**Description**
VidenDanmark: Knowledge Group meeting regarding internal social media in Companies and organisations, with Expert presentations, case and Exchange of experiences.

VidenDanmark: Knowledge Group meeting regarding internal social media in companies and organisations, with Expert presentations, case and Exchange of experiences.

**Links:**
http://www.videndanmark.dk/aktiviteter/afholdte-aktiviteter?FilterField1=ID&FilterValue1=62

**Related event**

*Interne sociale medier*

10/12/2014 → …
Gentofte, Denmark
*Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.*

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**Achieving clean transport in cities and CO2-free city logistics**

*Period: 8 Dec 2014*
Claus Hedegaard Sørensen (Lecturer)
Department of Transport
Transport policy and behaviour

Description
Presentation of roadmap for achieving of EU White Paper goal on urban transport
Links:
http://www.transforum-project.eu/events/dec-8th-2014-brussels.html

Related event
Transformation is possible. Roadmaps for the future of transport in Europe: Final conference of TRANSFORuM
08/12/2014 → …
Brussels, Belgium
Activity: Talks and presentations › Conference presentations

Use of KPI's in the Transform Project
Period: 4 Dec 2014
Per Sieverts Nielsen (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Documents:
DTU Transform EERA VTT Dec2014

Related event
EERA Smart City JP Workshop in Helsinki
04/12/2014 → 05/12/2014
Helsinki, Finland
Activity: Talks and presentations › Conference presentations

Engaging the public in climate decision-making: learning from local & national experiences: Promoting procedural rights in the implementation of the mechanisms
Period: 1 Dec 2014
Karen Holm Olsen (Invited speaker)
Department of Management Engineering
UNEP Risø Centre

Description
Side event at COP-20 in Lima, Peru
Links:
https://seors.unfccc.int/seors/reports/events_list.html?session_id=COP20

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Massachusetts Institute of Technology
Period: Nov 2014 → Jun 2015
Benjamin Paul Goldstein (Visiting researcher)
Quantitative Sustainability Assessment
Department of Management Engineering

Description
Visiting Scholar
Activity: Visiting an external institution › Visiting another research institution

**Virksomhedsværksted SSG**  
Period: 27 Nov 2014  
Rikke Seim (Participant)  
Department of Management Engineering  
Production and Service Management  
Implementation and Performance Management

**Related event**

**Virksomhedsværksted SSG**  
27/11/2014 → …  
Denmark  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**AMO Tolkeseminar U15**  
Period: 26 Nov 2014  
Rikke Seim (Organizer)  
Department of Management Engineering  
Production and Service Management  
Implementation and Performance Management

**Related event**

**AMO Tolkeseminar U15**  
26/11/2014 → …  
Denmark  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Dynamic versus static modelling of safety-critical systems for risk assessment**  
Period: 25 Nov 2014  
Frank Markert (Invited speaker)  
Department of Management Engineering  
Production and Service Management  
Risk Research Group  
Documents:  
Lund presentation nov2014

**Related event**

**The quest for an objective assessment of Risk: SP's riskseminarium**  
25/11/2014 → …  
Lund, Sweden  
Activity: Talks and presentations › Conference presentations

**Aalborg University (External organisation)**  
Period: 24 Nov 2014  
Kirsten Jørgensen (Participant)  
Department of Management Engineering  
Production and Service Management  
Risk Research Group

**Description**
PhD bedømmelse for Linda Drupsteen-Sint

PhD projektet Improving organisational safety through better learning from incidents and accidents

Related external organisation

Aalborg University
A.C. Meyers Vænge 15, 2450 Copenhagen SV, Aalborg, Denmark
Activity: Membership › Membership in review committee

4th International Seminar in Social LCA
Period: 21 Nov 2014
Arne Wangel (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
SLCA scenarios: engaging producers and consumers in new domestic oyster value chains in Denmark
Documents:
AW Presentation 21 November 2014 4th sem SLCA
Links:

Related event

4th International Seminar in Social LCA
19/11/2014 → 21/11/2014
Montpellier, France
Activity: Talks and presentations › Conference presentations

6th Danish Emergency Medicine Conference
Period: 20 Nov 2014
Christian Michel Sørup (Speaker)
Department of Management Engineering
Management Science

Related event

6th Danish Emergency Medicine Conference
20/11/2014 → 21/11/2014
Odense, Denmark
Activity: Talks and presentations › Conference presentations

Brush up på AM-uddannelsen: Strategisk arbejdsmiljøarbejde
Period: 20 Nov 2014
Rikke Seim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event

Supplerende arbejdsmiljøuddannelse
20/11/2014 → …
Denmark
Activity: Talks and presentations › Conference presentations
Supply Chain Management and Advanced Planning
Period: 18 Nov 2014
Daniel Alberto Sepúlveda Estay (Invited speaker)
Department of Management Engineering
Management Science

Description
Lecture on Supply Networks and Oursourcing

Related event
Supply Chain Management and Advanced Planning
02/09/2014 → …
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

66th semi-annual IEA ETSAP meeting
Period: 17 Nov 2014 → 21 Nov 2014
Peggy Mischke (Organizer)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

Description
Conference co-organizer, session chair, and speaker at the 66th semi-annual IEA ETSAP meeting
International energy modelling and planning conference under the International Energy Agency's Energy Technology Systems Analysis Program
Links:

Related event
66th semi-annual IEA ETSAP meeting
17/11/2014 → 17/11/2014
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Global Innovation and Product Development
Period: 17 Nov 2014
Francesco Rosati (Participant)
Department of Management Engineering
Technology and Innovation Management

Description
Participation in the the workshop: 'Global Innovation and Product Development'.

Related event
Global Innovation and Product Development
17/11/2014 → …
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Forest Policy and Economics (Journal)
Period: 15 Nov 2014 → 15 Dec 2014
Riyong Kim Bakkegaard (Reviewer)
Department of Management Engineering
UNEP DTU Partnership

Related journal

Forest Policy and Economics
Local database
Activity: Research › Peer review of manuscripts

Social kapital, ledelse og produktivitet
Period: 15 Nov 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Oplæg for medarbejderne i DJØF

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Social kapital, ledelse og produktivitet
Period: 13 Nov 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Oplæg for Samarbejdssudvalget i IDA

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Kompetenceopbygning til bæredygtighed i FM
Period: 12 Nov 2014
Susanne Balslev Nielsen (Invited speaker)
Department of Management Engineering
Production and Service Management
Centre for Facilities Management

Description
Præsentation på heldagsseminar arrangeret af INNOBYG og KEA

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Bæredygtighed i byggeriet: også når håndværkerne er taget hjem!
København, Denmark
Activity: Talks and presentations › Conference presentations
Høring i transportudvalget
Period: 11 Nov 2014
Mogens Fosgerau (Invited speaker)
Transport policy and behaviour
Department of Management Engineering
Links:
http://www.ft.dk/webtv/video/20131/tru/tv.2481.aspx?from=09-10-2012&to=09-10&selectedMeetingType=&committee=&as=1 (Video fra Landstingssalen)

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Social Business vs. Vidensdeling
Period: 11 Nov 2014
Peter Bo Sarka (Participant)
Production and Service Management
Department of Management Engineering
Description
VidenDanmark
Knowledge Group meeting: Social media in companies and organisations
Links:
http://www.videndanmark.dk/aktiviteter/kalender?FilterField1=ID&FilterValue1=61

Related event
Social Business vs. Vidensdeling
11/11/2014 → …
Frederiksberg, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Uddannelse af arbejdsmiljøprofessionelle
Period: 11 Nov 2014
Liv Starheim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Related event
Arbejdsmiljøkonferencen 2014
Nyborg, Denmark
Activity: Talks and presentations › Conference presentations

Arbejdsmiljøkonferencen 2014
Period: 10 Nov 2014
Rikke Seim (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Description
Oplæg "Tendenser og drivkrafter i arbejdsmiljøarbejdet"

Related event

Arbejdsmiljøkonferencen 2014
Nyborg, Denmark
Activity: Talks and presentations › Conference presentations

Hvad bestemmer, hvad problemet i det psykiske arbejdsmiljø skal hedde?
Period: 10 Nov 2014
Liv Starheim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event

Arbejdsmiljøkonferencen 2014
Nyborg, Denmark
Activity: Talks and presentations › Conference presentations

Social kapital og relationel koordinering: To væsensforskellige tilgange til trivsel og produktivitet
Period: 10 Nov 2014
Kasper Edwards (Lecturer)
Department of Management Engineering
Production and Service Management

Description
AM:2014

Related event

Arbejdsmiljøkonferencen 2014
Nyborg, Denmark
Activity: Talks and presentations › Conference presentations

Planning Liner Shipping Services
Period: 9 Nov 2014 → 12 Nov 2014
Christian Vad Karsten (Invited speaker)
Department of Management Engineering
Management Science

Related event

INFORMS Annual Meeting 2014
09/11/2014 → 12/11/2014
San Francisco, CA, United States
Activity: Talks and presentations › Conference presentations

8th NOVO Symposium
Period: 7 Nov 2014
Rikke Seim (Speaker)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
A strategic approach to prevention of musculoskeletal disorders
Documents:
NOVO Seim 7112014

Related event
8th NOVO Symposium
06/11/2014 → 07/11/2014
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Lean process as tool to integrate wellbeing, quality and efficiency in hospitals
Period: 6 Nov 2014
Liv Starheim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event
8th NOVO Symposium
06/11/2014 → 07/11/2014
Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Proceedings for Work, Stress and Health Conference, Atlanta, US, may 2015 (Journal)
Period: 5 Nov 2014 → 24 Nov 2014
Christine Ipsen (Reviewer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related journal
Proceedings for Work, Stress and Health Conference, Atlanta, US, may 2015
Local database
Activity: Research › Peer review of manuscripts

UDTU: Education in University Teaching at DTU - Module 3
Period: 5 Nov 2014 → 7 Nov 2014
Laila Marianne Martinussen (Participant)
Department of Management Engineering
Technology and Innovation Management

Related event
UDTU: Education in University Teaching at DTU - Module 3
05/11/2014 → 07/11/2014
Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
Strategy and financing for establishing new ventures in emerging market
Period: 4 Nov 2014
Francesco Rosati (Participant)
Department of Management Engineering
Technology and Innovation Management

Related event
Strategy and financing for establishing new ventures in emerging market
04/11/2014 → …
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

CIVITAS CAPITAL Advisory Group 5 Data and Statistics (External organisation)
Period: 1 Nov 2014 → 30 Oct 2015
Henrik Gudmundsson (Participant)
Department of Transport
Transport policy and behaviour

Description
Body type: Advisory Group
Degree of recognition: International

Related external organisation
CIVITAS CAPITAL Advisory Group 5 Data and Statistics
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Remember to remember: Smart technology for patients with MCI and dementia
Period: 30 Oct 2014
Anja Maier (Invited speaker)
Department of Management Engineering
Production and Service Management
Engineering Systems Group
Links:

Related event
Demensrådet Denmark: Temadag Rehabilitation
30/10/2014 → …
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

World Sustainable Building Conference 2014
Period: 30 Oct 2014
Benjamin Paul Goldstein (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Presentation of Paper - Urban agricultural typologies and the need to quantify their potential to reduce a city’s environmental ‘foodprint’
Documents:
24 Urban agricultural typologies and the need to quantify their potential to reduce a city’s environmental ‘foodprint’
Related event

**World Sustainable Building Conference 2014**
28/10/2014 → 30/10/2014
Barcelona, Spain
Activity: Attending an event › Participating in or organising a conference

**Arbejdsmiljøakademiet**
Period: 22 Oct 2014
Ole Broberg (Organizer)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Workspace Design: Arbejdsmiljøhensyn og medarbejderinvolvering i design af nye arbejdspælser

Related event

**Arbejdsmiljøakademiet**
22/10/2014 → …
København, Denmark
Activity: Attending an event › Participating in or organising a conference

**IARU Sustainability Science Congress**
Nuno Miguel Dias Cosme (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Participation in the IARU Sustainability Science Congress 2014 in Copenhagen, Denmark

Related event

**IARU Sustainability Science Congress**
22/10/2014 → 24/10/2014
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference

**Energiscenerier for Sønderborg**
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
Energiscenerier for Sønderborg

Related event

**Energiscenerier for Sønderborg**
20/10/2014 → 21/10/2014
Sønderborg, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
Kompetencer til FM i Norden: Tiltrædelsesforelæsning som Professor II på HiOA, Norge
Period: 20 Oct 2014
Susanne Balslev Nielsen (Lecturer)
Department of Management Engineering
Production and Service Management
Centre for Facilities Management

Description
Inaugural Lecture as Professor at HiOA, Norway

Related external organisation
Unknown external organisation

Activity: Talks and presentations › Conference presentations

Workshop of INCOSE Sweden
Period: 20 Oct 2014
Josef Oehmen (Organizer)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Industry workshop of INCOSE Sweden on Lean Thinking applications in Systems Engineering
Lean and Systems Engineering - The Perfect Match

Related event
Workshop of INCOSE Sweden
20/10/2014 → …
Södertälje, Sweden
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

NAMAcademy 2014
FEDERICO ANTONIO CANU (Speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
Presentations and coaching of participants

NAMAcademy - The NAMAcademy provides focused training on practical issues when designing climate change mitigation policies and actions, and the expectations of donors and financiers, assisting in bringing the initial idea to a well-structured concept designed to approach potential financiers.

Related event
NAMAcademy 2014
19/10/2014 → 24/10/2014
Denmark
Activity: Talks and presentations › Conference presentations

Plenary session: Measuring Sustainable Development Impacts of NAMAs
Period: 16 Oct 2014
Karen Holm Olsen (Speaker)
UNEP Risø Centre
Department of Management Engineering
Degree of recognition: International
Links:
http://www.lowemissiondevelopment.org/news

Related event
Low-Emission Capacity Building (LECB) Programme
14/10/2014 → 16/10/2014
Brussels, Belgium
Activity: Talks and presentations › Conference presentations

Transit oriented urban development and regional cycle networks for a sustainable Danish capital area
Period: 16 Oct 2014
Thomas Alexander Sick Nielsen (Speaker)
Department of Transport
Transport policy and behaviour

Related event
Hangzhou International Sister City Mayors Conference 2014
15/10/2014 → 18/10/2014
Hangzhou, China
Activity: Talks and presentations › Conference presentations

International Conference on Human Behaviour in Design 2014
Anja Maier (Speaker)
Department of Management Engineering
Engineering Systems Group
Production and Service Management
Links:
http://www.hbid.net

Related event
International Conference on Human Behaviour in Design 2014
14/10/2014 → 17/10/2014
Ascona, Switzerland
Activity: Talks and presentations › Conference presentations

Measures identified in technology action plans to enhance national capacity: The case of Solar PV in Africa
Period: 14 Oct 2014
Ivan Nygaard (Invited speaker)
Department of Management Engineering
UNEP DTU Partnership

Description
2014: Measures identified in technology action plans to enhance national capacity: The case of Solar PV in Africa.
UNFCCC (Technology Executive Committee) workshop on strengthening national systems of innovation in developing countries, Bonn, Germany, 13/10/14
Degree of recognition: International
Documents:
Presentation TEC meeting UDP ivan nygaard
**Related event**

Strengthening national systems of innovation in developing countries. UNFCCC (Technology Executive Committee) workshop  
13/10/2014 → 13/10/2014  
Bonn, Germany  
Activity: Talks and presentations › Conference presentations

**Sustainable Transport – What is the Status?**  
Period: 9 Oct 2014  
Henrik Gudmundsson (Lecturer)  
Department of Transport  
Transport policy and behaviour

**Description**  
Foredrag på faglig konference (slides)  
Documents:  
Future Truck and Public Transport HGU

**Related event**

Future Truck and Public Transport in an Energy perspective  
09/10/2014 → …  
Kgs Lyngby, Denmark  
Activity: Talks and presentations › Conference presentations

**Innovation in Services and Stakeholder Interactions**  
Period: 8 Oct 2014  
Giulia Nardelli (Invited speaker)  
Department of Management Engineering  
Management Science  
Implementation and Performance Management

**Description**  
Presentation at Center for Facilities Management Research Forum  
Degree of recognition: Local

**Related organisation**

Innovation in Services and Stakeholder Interactions  
Nardelli, G. (Invited speaker)  
8 Oct 2014  
Activity: Talks and presentations › Conference presentations

**Journal of Knowledge Management (JKM) (Journal)**  
Peter Bo Sarka (Reviewer)  
Department of Management Engineering  
Production and Service Management  
Implementation and Performance Management

**Description**  
Was reviewer on an article submitted to the journal.

**Related journal**

Journal of Knowledge Management (JKM)  
Local database
**Rollen som Arbejdsmiljøprofessionel**  
*Period: 7 Oct 2014*  
*Rikke Seim (Speaker)*  

Department of Management Engineering  
Production and Service Management  
Implementation and Performance Management  

**Related event**  
*Rollen som Arbejdsmiljøprofessionel: IDA Arbejdsmiljø*  
07/10/2014 → …  
Denmark  

Activity: Talks and presentations › Talks and presentations in private or public companies and organisations  

**Shared Space i Lyngby Vidensby: Hvordan kan vi dele smartere**  
*Period: 7 Oct 2014*  
*Susanne Balslev Nielsen (Lecturer)*  

Department of Management Engineering  
Production and Service Management  
Centre for Facilities Management  

**Description**  
Oplæg og workshop på medlemsmøde arrangeret af Lyngby Vidensby  

**Related external organisation**  
**Unknown external organisation**  
Activity: Talks and presentations › Conference presentations  

**Social kapital, ledelse og produktivitet**  
*Period: 7 Oct 2014*  
*Kasper Edwards (Invited speaker)*  

Department of Management Engineering  
Production and Service Management  

**Description**  
Oplæg for DJØF's ledergruppe  

**Related external organisation**  
**Unknown external organisation**  
Activity: Talks and presentations › Conference presentations  

**Organisations psykologi og det psykiske arbejdsmiljø**  
*Period: 6 Oct 2014*  
*Liv Starheim (Lecturer)*  

Department of Management Engineering  
Production and Service Management  
Implementation and Performance Management  

Activity: Other
5th NorLCA Symposium
Benjamin Paul Goldstein (Speaker)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Presentation - 'Urban Foodprints and Urban Agriculture'

Related event

5th NorLCA Symposium: Global Sustainability Challenges – Northern Approaches
02/10/2014 → 03/10/2014
Reykjavik, Iceland
Activity: Talks and presentations › Conference presentations

COI Workcamp om Kortlægning af innovations-landskabet, Innovationsbarometer, Workshop om hovedaktiviteten Innovationspraktik
Period: 2 Oct 2014
Kasper Edwards (Speaker)
Production and Service Management
Department of Management Engineering

Related event

COI Workcamp om Kortlægning af innovations-landskabet, Innovationsbarometer, Workshop om hovedaktiviteten Innovationspraktik
02/10/2014 → …
Vejle, Denmark
Activity: Talks and presentations › Conference presentations

Knowledge management - Research and practice (Journal)
Period: 1 Oct 2014 → …
Christine Ipsen (Reviewer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related journal

Knowledge management - Research and practice
Local database
Activity: Research › Peer review of manuscripts

Prevention of the many simple accidents which have major consequences
Period: 1 Oct 2014
Kirsten Jørgensen (Keynote speaker)
Department of Management Engineering
Production and Service Management
Risk Research Group
Documents:
Prevention of simple accidents with major consequences, power points final

Related event

7th International Conference of Workingonsafety.net: Learning from the past to shape a safer future
Regional Workshop on Nationally Appropriate Mitigation Actions
Karen Holm Olsen (Invited speaker)
Department of Management Engineering
UNEP Risø Centre

Description
Three presentations made
Documents:
UNEP_DTU_Co-benefits
UNEP_DTU_Institutions
CTCN background update 25 09 14 for NAMA workshop in Africa
UNEP_DTU_Co_benefits
UNEP_DTU_Institutions
CTCN_background_update_25_09_14_for_NAMA_workshop_in_Africa

Related event
Regional Workshop on Nationally Appropriate Mitigation Actions: Africa
01/10/2014 → 03/10/2014
Windhoek, Namibia
Activity: Talks and presentations › Conference presentations

Safety by design in Danish construction
Period: 1 Oct 2014
Casper Siebken Schultz (Lecturer)
Department of Management Engineering
Production and Service Management
Risk Research Group

Description
Konferencepræsentation
Links:
http://www.wos2014.net/

Related event
7th International Conference of Workingonsafety.net: Learning from the past to shape a safer future
30/09/2014 → 03/10/2014
Glasgow, United Kingdom
Activity: Talks and presentations › Conference presentations

'Ny viden om trafiksikkerhed'
Period: 30 Sep 2014
Laila Marianne Martinussen (Invited speaker)
Department of Transport

Related event
Samarbejde om Sikker Trafik
30/09/2014 → 01/10/2014
Vejle, Denmark
Activity: Talks and presentations › Conference presentations
Virksomhedsværksted Danske Bank
Period: 29 Sep 2014
Rikke Seim (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event
Virksomhedsværksted Danske Bank
29/09/2014 → …
Denmark
Activity: Attending an event › Participating in or organising a conference

Integrated Climate and Hydrology Modelling – catchment scale coupling of a regional climate model and a hydrological Model
Period: 28 Sep 2014 → 2 Oct 2014
Morten Andreas Dahl Larsen (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Links:

Related event
TERENO International Conference 2014
28/09/2014 → 02/10/2014
Bonn, Germany
Activity: Talks and presentations › Conference presentations

UDTU: Education in University Teaching at DTU - Module 2
Period: 24 Sep 2014 → 26 Sep 2014
Laila Marianne Martinussen (Participant)
Department of Management Engineering
Technology and Innovation Management

Related event
UDTU: Education in University Teaching at DTU - Module 2
24/09/2014 → 26/09/2014
Gentofte, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Congresso Brasileiro de Ergonomia
Period: 17 Sep 2014
Ole Broberg (Organizer)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Description
Workshop on Work Systems Analysis in Design Projects
Natural Resource Management for Sustainable Development
Period: 17 Sep 2014
Xiao Wang (Invited speaker)
Department of Management Engineering
UNEP Risø Centre

Description
One of the major obstacles to increasing energy access is the inability for practitioners and policy makers to gain practical and timely knowledge on how to overcome existing barriers to provide modern energy services. The GNESD Energy Access Knowledge Base provides users with an informational platform to spread innovative ideas and share successful experiences.

Half day seminar at UNEP DTU Partnership

Related event
Danida Fellowship Course September 2014 : Natural Resource Management for Sustainable Development
01/09/2014 → 19/09/2014
Copenhagen, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

Simulation in Ergonomics: Context, Participants, Results
Period: 17 Sep 2014
Ole Broberg (Keynote speaker)
Department of Management Engineering
Production and Service Management
Engineering Systems Group

Related event
Congresso Brasileiro de Ergonomia
16/09/2014 → 19/09/2014
Sao Carlos, Brazil
Activity: Talks and presentations › Conference presentations

Power, Politics and Motivation
Period: 15 Sep 2014
Christine Ipsen (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

2nd Network Meeting in Global Knowledge Research Network
Period: 12 Sep 2014
Christine Ipsen (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Links:
http://lubswww.leeds.ac.uk/global-knowledge-survey/home/

Related event

2nd Network Meeting in Global Knowledge Research Network
Period: 12 Sep 2014
Belfast, United Kingdom
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

VidenDanmark Kick-Off seminar
Period: 10 Sep 2014
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

BAM 2014 Conference
Period: 9 Sep 2014 → 11 Sep 2014
Belfast, United Kingdom
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
Related event

BAM 2014 Conference: The Role of the Business School in Supporting Economic and Social Development
09/09/2014 → 11/09/2014
Belfast, United Kingdom
Activity: Attending an event › Participating in or organising a conference

Sustainable Development and the Assessment of Transport Infrastructure
Period: 4 Sep 2014
Henrik Gudmundsson (Invited speaker)
Department of Transport
Transport policy and behaviour

Description
Key note foredrag ved konference (ikke videnskabelig), en indbudt politiksk konference
Documents:
Gudmundsson Slides FINAL

Related event

International Conference on the Role of Transport and Transit Corridors in Ensuring International Cooperation, Stability and Sustainable Development
03/09/2014 → 04/09/2014
Ashgabat, Turkmenistan
Activity: Talks and presentations › Conference presentations

Censorkorpset i geologi (External organisation)
Period: 1 Sep 2014 → …
Morten Andreas Dahl Larsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Member of censorkorpset i geologi
Links:
http://geologicensor.dk/censorer/larsen_morten_andreas_dahl/

Related external organisation

Censorkorpset i geologi
Activity: Membership › Membership in review committee

International Journal of Human Factors and Ergonomics (Journal)
Period: 1 Sep 2014 → 1 Jan 2016
Christine Ipsen (Editor)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management
Links:

Related journal
Modeling and Solving the Liner Shipping Service Selection Problem
Period: 1 Sep 2014 → 2 Sep 2014
Christian Vad Karsten (Invited speaker)
Department of Management Engineering
Management Science

Related event
LOT - Logistics, Optimization and Transportation: A special EU/MEeting in memory of late Professor Arne Løkketangen
01/09/2014 → 02/09/2014
Molde, Norway
Activity: Talks and presentations › Conference presentations

3rd Nordic International Conference on Climate Change Adaptation
Period: 27 Aug 2014
Catharina Wolff von Bülow (Speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Related event
3rd Nordic International Conference on Climate Change Adaptation
25/08/2014 → 27/08/2014
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Evaluering af Arbejdsmiljøreformen
Period: 27 Aug 2014
Rikke Seim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event
Evaluering af Arbejdsmiljøreformen
27/08/2015 → ...
Denmark
Activity: Talks and presentations › Conference presentations

Workshops som led i beslutningsprocesser om bæredygtig transport
Period: 26 Aug 2014
Michael Bruhn Barfod (Speaker)
Department of Transport
Transport policy and behaviour

Related event
Trafikdage Aalborg 2014
Improved regional scale projections using integrated climate and hydrology modelling.
Morten Andreas Dahl Larsen (Lecturer)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Links:
http://nordicadaptation2014.net/frontpage/

Related event
3rd Nordic International Conference on Climate Change Adaptation
25/08/2014 → 27/08/2014
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

LEAN – arbejdsmiljø og relationel koordinering – hvordan arbejder vi med LEAN i dette spændingsfelt.
Period: 25 Aug 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Description
3 timers workshop

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Groningen Energy Summer School 2014
Period: 19 Aug 2014 → 29 Aug 2014
Sara Ben Amer-Allam (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Description
University of Groningen Energy Summer School 2014

Related event
Groningen Energy Summer School 2014
18/08/2014 → 29/08/2014
Groningen, Netherlands
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

11th International Symposium on Human Factors in Organizational Design and Management and 46th Annual Nordic Ergonomics Society Conference (NES)
Period: 18 Aug 2014
Christine Ipsen (Organizer)
Department of Management Engineering
Production and Service Management

**Description**
Workshop: Designing work systems for productivity and well-being

**Links:**
http://www.odam2014.org/

**Related event**

11th International Symposium on Human Factors in Organizational Design and Management and 46th Annual Nordic Ergonomics Society Conference (NES)
17/08/2014 → 20/08/2014
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference

Department of Management Engineering
Production and Service Management

**Description**
Chair of Organizing Committee

**Links:**
http://www.odam2014.org

**Related event**

11th International Symposium on Human Factors in Organizational Design and Management and 46th Annual Nordic Ergonomics Society Conference (NES)
17/08/2014 → 20/08/2014
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference

Signe Poulsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

**Description**
ODAM-NES Conference

**Related event**

11th International Symposium on Human Factors in Organizational Design and Management and 46th Annual Nordic Ergonomics Society Conference (NES)
17/08/2014 → 20/08/2014
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

EERA jp Wind (External organisation)
Period: 1 Aug 2014 → …
Klaus Skytte (Participant)
Department of Management Engineering
Energy Economics and Regulation

**Description**
European Energy Research Alliance, EERA, joint program on Wind energy, EU

Member of the managing board and deputy co-ordinator of the sub-group on Economic and social aspects

Body type: EU research alliances
Degree of recognition: International

**Related external organisation**

**EERA jp Wind**
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

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**International Journal of Human Factors and Ergonomics (Journal)**
**Period:** 1 Aug 2014 → 1 Oct 2015
**Signe Poulsen (Editor)**

**Description**
International Journal of Human Factors and Ergonomics

Guest editor of special issue entitled: Intervention studies in human factors and ergonomics

**Related journal**

International Journal of Human Factors and Ergonomics
2045-7804
BFI (2018): BFI-level 1
Central database
Activity: Research › Journal editor

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**Successful Leadership, Innovation, and Entrepreneurship within the Energy Sector**
**Period:** 14 Jul 2014
**Karen Murdock (Guest lecturer)**

**Description**
Summer school for honors students from CBS, DTU, TU Delft and Politechno di Milano

**Related event**

Successful Leadership, Innovation, and Entrepreneurship within the Energy Sector
07/07/2014 → 18/07/2014
Como, Italy
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

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**The networks behind complex engineering systems: Tales from Denmark**
**Period:** 7 Jul 2014
**Anja Maier (Invited speaker)**

Department of Management Engineering
Production and Service Management
Related event

7th IPS² Summer School on "Managing cycles in innovation processes"
07/07/2014 → 11/07/2014
Munich, Germany
Activity: Talks and presentations › Conference presentations

Association of European Schools of Planning PhD Workshop 2014
Period: 5 Jul 2014 → 8 Jul 2014
Sara Ben Amer-Allam (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis

Related event

Association of European Schools of Planning PhD Workshop 2014
05/07/2014 → 08/07/2014
Delft, Netherlands
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Energy and SDGs: Bioenergy as a tool for de-carbonization in Africa
Period: 2 Jul 2014 → 4 Jul 2014
Emmanuel Ackom (Speaker)
Department of Management Engineering
UNEP Rise Centre

Description
Bioenergy: electrification, decarbonization & development potential in Cameroon

The sixth Africa Carbon Forum (ACF) took place from 2-4 July 2014, in Windhoek, Namibia. The Forum will: inform attendees of developments in carbon markets; provide a venue for connecting carbon project developers and investors; showcase lessons from completed Clean Development Mechanism (CDM) projects in Africa; feature presentations on public and private sector strategies for promoting CDM benefits in Africa; and encourage networking and discussions among technical experts, project developers and carbon buyers. The Forum is organized by the UNFCCC Secretariat, the UN Environment Programme (UNEP), the UNEP DTU Partnership, the International Emissions Trading Association (IETA), the World Bank, and the African Development Bank (AfDB).

Links:
http://www.africacarbonforum.com/2014/english/objective.htm

Related event

Energy and SDGs: Bioenergy as a tool for de-carbonization in Africa
02/07/2014 → 04/07/2014
Windhoek, Namibia
Activity: Talks and presentations › Conference presentations

Climate Change Adaptation to Urban Flooding, a Cost Benefit Analysis and Real Options Theory Comparison
Period: 1 Jul 2014 → 8 Jul 2014
Jay Sterling Gregg (Main supervisor)
Department of Management Engineering
Systems Analysis

**Description**
Special Masters Course
Tina Mathiesen
s090624
Activity: Examinations and supervision › Supervisor activities

**European Facility Management Network (External organisation)**
Period: Jun 2014 → Sep 2015
Giulia Nardelli (Member)

Production and Service Management
Centre for Facilities Management
Implementation and Performance Management
Department of Management Engineering

**Description**
Organisation and coordination of activities for the Post-Graduate Group (composed by Ph.D. students, research assistants and Post-Docs) of the EuroFM Research Network
Degree of recognition: International

**Related external organisation**
European Facility Management Network
Activity: Membership › Membership of research networks or expert groups

**CAVI Seminar**
Period: 26 Jun 2014
Rikke Seim (Participant)

Department of Management Engineering
Production and Service Management
Implementation and Performance Management

**Related event**
CAVI Seminar
26/06/2014 → …
Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Fejø Energiplan 2015-2025: En omstilling af Energiforsyningen på Fejø**
Period: 24 Jun 2014
Jørgen Villy Fenhann (External examiner)

UNEP Risø Centre
Department of Management Engineering

**Description**
Censor for 4. semester project på Tek-Sam på RUC
Activity: Examinations and supervision › External examination

**Prospects for investments in Large-scale, grid connected solar energy in Africa**
Period: 24 Jun 2014
Ivan Nygaard (Speaker)

Department of Management Engineering
UNEP DTU Partnership
Degree of recognition: International
Documents:
Prospects for investment in large-scale, grid-connected solar energy in Africa final ver. 15.09 link

Related event
Opportunity Africa: Sustainable Energy Investment in Africa, DANIDA conference held in the UN City, Copenhagen
24/06/2014 → 25/06/2014
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

A framework for solving stochastic vehicle routing problems in a dynamic setting using a deterministic solver
Period: 23 Jun 2014
Rune Larsen (Speaker)
Department of Management Engineering
Transport DTU
Transport Modelling

Related event
VeRoLog 2014: The third meeting of the EURO Working Group on Vehicle Routing and Logistics Optimization
22/06/2014 → 25/06/2014
Oslo, Norway
Activity: Talks and presentations › Conference presentations

Euroscience Open Forum 2014
Period: 21 Jun 2014 → 26 Jun 2014
Ivo Grigorov (Organizer)
National Institute of Aquatic Resources
Research Secretariat
Technical Information Center of Denmark
Department of Management Engineering

Description
We are on the verge of a paradigm shift in the way new knowledge is shared. The internet allows for complete openness for research, innovation and personal and government information. Openness to resources from academia, government and industry changes the playing field for citizens, scientists, inventors and industry allowing all to participate in innovation and value creation, regardless of geography and background. This session explores the balance between benefits and concerns in relation to openness to knowledge and data. It showcases the current impact potential of Open Science and Open Innovation, while considering intellectual property, the right for commercial exploitation of innovative concepts, and not least, the need for privacy legislation preventing misuse of personal data. The session is an experiment to eliminate the boundaries between research, innovation and social science, and explore the effects of an Open Attitude, based on the understanding that there is an inevitable paradigm shift across them all. The interactive session provides exposure to a multidisciplinary audience, that is appealing not only across scientific disciplines but also for citizens, industry and policy makers. Some of the questions to instigate the discussion include “Why should I care about openness?”, “Does Open Science create more impact?”, “Does intellectual property enable or hinder progress?”, “Does openness pose risks for privacy and patients?”.

ESOF2014 Session: Open Science, Benefiting Progress, or a Concern for Privacy?
Links:
http://www.esof2014.org

Related event
Euroscience Open Forum 2014
21/06/2014 → 26/06/2014
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference
50th Drug Information Association Annual Meeting
Period: 19 Jun 2014
Erika Buonansegna (Invited speaker)
Department of Management Engineering
Technology and Innovation Management

Related event
50th Drug Information Association Annual Meeting: Celebrating the past- Invent the future
15/06/2014 → 19/06/2014
San Diego, United States
Activity: Talks and presentations › Conference presentations

Social kapital og produktivitet
Period: 17 Jun 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management

Description
Oplæg på temadag på Institut for Lykkeforskning

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Coupled regional climate and hydrology modelling at the catchment scale
Period: 16 Jun 2014 → 19 Jun 2014
Morten Andreas Dahl Larsen (Lecturer)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Links:
http://www.baltex-research.eu/RCM2014/

Related event
3rd International Lund Regional-Scale Climate Modelling Workshop: 21st Century Challenges in Regional Climate Modelling
16/06/2014 → 19/06/2014
Lund, Sweden
Activity: Talks and presentations › Conference presentations

Doubling the Global Rate of Improvement in Energy Efficiency by 2030
Period: 16 Jun 2014 → 17 Jun 2014
Aristeidis Tsakiris (Participant)
Department of Management Engineering
UNEP Risø Centre
Documents:
SE4ALL Energy Efficiency Hub Workshop Report
Links:
**Related event**

**Doubling the Global Rate of Improvement in Energy Efficiency by 2030: Options, Implementation Issues and Way Forward**
16/06/2014 → 17/06/2014
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Gendering Transport and Sustainability Network Meeting and Workshop, University of Copenhagen and Nordic Forum 2014: Presentation of results from the Bikeability project, work package 1**
Period: 13 Jun 2014
Thomas Alexander Sick Nielsen (Speaker)
Department of Transport
Transport policy and behaviour

**Related event**

**Gendering Transport and Sustainability Network Meeting and Workshop**
13/06/2014 → 14/06/2014
Malmö, Sweden
Activity: Talks and presentations › Conference presentations

**A novel risk assessment method using dynamic simulation of fire and egress scenarios on off-shore platforms**
Period: 12 Jun 2014
Frank Markert (Lecturer)
Department of Management Engineering
Production and Service Management
Documents:
FSD2014-Frank Markert

**Related event**

**fire**
12/06/2014 → ...
Kongens Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

**Forandring fryder eller?? Om produktivitet og trivsel**
Period: 12 Jun 2014
Kasper Edwards (Panel member)
Department of Management Engineering
Production and Service Management

**Description**

**Related event**

**Folkemødet 2014: Danmarks politik-festival på Bornholm**
11/06/2014 → 14/06/2014
Allinge, Bornholm, Denmark
Activity: Talks and presentations › Conference presentations
ICSB International Conference
Period: 11 Jun 2014 → 14 Jun 2014
Karen Murdock (Participant)
Department of Management Engineering
Technology and Innovation Management
Description
Paper presentation.

Related event
ICSB International Conference: Entrepreneurship and Sustainability
10/06/2014 → 14/06/2014
Dublin, Ireland
Activity: Attending an event › Participating in or organising a conference

Integrated Climate and Hydrology Modelling – catchment scale coupling of the HIRHAM regional climate model and the MIKE SHE hydrological Model
Period: 11 Jun 2014 → 13 Jun 2014
Morten Andreas Dahl Larsen (Keynote speaker)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Links:

Related event
1st European Fully Coupled Atmospheric-Hydrological Modeling and WRF-Hydro Users workshop
11/06/2014 → 13/06/2014
Rende, Italy
Activity: Talks and presentations › Conference presentations

Strategic Research in Transport and Infrastructure
Period: 11 Jun 2014 → 12 Jun 2014
Laila Marianne Martinussen (Speaker)
Department of Management Engineering
Technology and Innovation Management
Description
Presented the paper "Driver style and driver skill – Clustering sub-groups of drivers differing in their potential danger in traffic".

Related event
Strategic Research in Transport and Infrastructure
11/06/2014 → 12/06/2014
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

Strategic Research in Transport and Infrastructure
Period: 11 Jun 2014 → 12 Jun 2014
Laila Marianne Martinussen (Speaker)
Department of Management Engineering
Technology and Innovation Management

**Description**
Presented the paper "Short and user-friendly: the development and validation of the Mini-DBQ"

**Related event**

**Strategic Research in Transport and Infrastructure**
11/06/2014 → 12/06/2014  
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

**Coupling a regional climate model on a meso-scale domain to a hydrological model for a groundwater dominated catchment**
Period: 10 Jun 2014 → 13 Jun 2014  
Morten Andreas Dahl Larsen (Other)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Energy Systems Analysis
Links:
http://www.cmwr14.de/

**Related event**

**20th International Conference on Computational Methods in Water Resources**
10/06/2014 → 13/06/2014  
Stuttgart, Germany
Activity: Talks and presentations › Conference presentations

**Renewables in Power Markets**
Period: 5 Jun 2014  
Henrik Klinge Jacobsen (Invited speaker)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

**Description**
Presentation June 5 2014 at The Economics Department, University of Tartu, Estonia.
Documents:
Renewables in power markets

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**Babson College Entrepreneurship Research Conference**
Period: 4 Jun 2014 → 7 Jun 2014  
Karen Murdock (Participant)
Department of Management Engineering
Technology and Innovation Management

**Description**
Development paper presentation

**Related event**
Babson College Entrepreneurship Research Conference
04/06/2014 → 07/06/2014
London, Ontario, Canada
Activity: Attending an event › Participating in or organising a conference

Global Product Development: Industrial Cases
Period: 3 Jun 2014
Saeema Ahmed-Kristensen (Organizer)
Department of Management Engineering
Technology and Innovation Management

Description
Global Product Development: Industrial Cases
Workshop held for industry participants primarily VP RD, and project manager in manufacturing industries.

Related event
Global Product Development: Industrial Cases
03/06/2014 → 03/06/2014
Horsholm, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Integrated Safety in Design: Konference præsentation
Period: 3 Jun 2014
Casper Siebken Schultz (Lecturer)
Department of Management Engineering
Production and Service Management

Description
Konference præsentation.

Related event
Achieving Sustainable Construction Health and Safety Conference
02/06/2014 → 03/06/2014
Lund, Sweden
Activity: Talks and presentations › Conference presentations

Sammenhænge mellem social kapital og produktivitet
Period: 3 Jun 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management

Description
Oplæg for 3F Arbejdsmiljøpolitisk Udvalg

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Workshop på Hotel Helnan Marselis, Århus 3-4 juni 2014, "Bybånd Østjylland i et globalt perspektiv": Byregion, centerstruktur og transport
Period: 3 Jun 2014
Thomas Alexander Sick Nielsen (Speaker)
Department of Transport
Transport policy and behaviour

Related event

*Bybånd Østjylland i et globalt perspektiv: Byregion, centerstruktur og transport*
03/06/2014 → 04/06/2014
Århus, Denmark
Activity: Talks and presentations › Conference presentations

6th International Conference on Applied Energy
Period: 1 Jun 2014
Peggy Mischke (Speaker)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

Related event

6th International Conference on Applied Energy
30/05/2014 → 02/06/2014
Taipei City, Taiwan, Province of China
Activity: Talks and presentations › Conference presentations

Journal of Evolutionary Economics (Journal)
Period: 1 Jun 2014 → 20 Aug 2014
Anne Nygaard Tanner (Reviewer)
Department of Management Engineering
Technology and Innovation Management

Description
Journal of Evolutionary Economics

Related journal

Journal of Evolutionary Economics
0936-9937
Scopus rating (2016): CiteScore 1.09 SJR 0.748 SNIP 0.731, Web of Science (2018): Indexed yes
Local database
Activity: Research › Peer review of manuscripts

Member of International Network Committee, Danish Agency for Science, Technology and Innovation (External organisation)
Period: 1 Jun 2014 → 31 May 2017
Birte Holst Jørgensen (Participant)
Department of Management Engineering
Production and Service Management

Description
Member
International Network Funding committee

Body type: Committee

Related external organisation

Member of International Network Committee, Danish Agency for Science, Technology and Innovation
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar
**11th International Conference on Computational Management Science**  
Period: 29 May 2014  
Agnieszka Karolina Konicz Bell (Speaker)  
Department of Management Engineering  
Management Science

**Description**  
Optimal retirement planning with a focus on single and multilife annuities

**Documents:**

**Links:**

http://cms2014.fc.ul.pt

**Related event**

**11th International Conference on Computational Management Science**  
29/05/2014 → 31/05/2014  
Lisbon, Portugal  
Activity: Talks and presentations › Conference presentations

**Energy Services and Demand**  
Period: 26 May 2014  
Per Sieverts Nielsen (Lecturer)  
Department of Management Engineering  
Systems Analysis  
DTU Climate Centre  
Centre for IT-Intelligent Energy Systems in Cities

**Documents:**

**Energy Services CITIES - Nielsen 26-05-14**

**Related event**

**CITIES Annual Conference**  
26/05/2014 → 28/05/2014  
Kgs. Lyngby, Denmark  
Activity: Talks and presentations › Conference presentations

**Benefits of interrelationships between climate change mitigation and adaptation: – a case study of replanting mangrove forests in Cambodia**  
Period: 23 May 2014  
Lea Ravnkilde Møller (Lecturer)  
Department of Management Engineering  
UNEP Risø Centre

**Description**  
Preliminary results on the possible interlinkages between climate change adaptation and mitigation, using replanting of mangrove forest as a case study

**Documents:**

140523 LRM SSFE

**Related event**

**Scandinavian Society of Forest Economics Biennial Scientific Conference 2014**  
21/05/2014 → 23/05/2014  
Uppsala, Sweden  
Activity: Talks and presentations › Conference presentations
Recent Research in Operations Research, Financial Engineering and Operations Management
Period: 22 May 2014
Agnieszka Karolina Konisz Bell (Speaker)
Department of Management Engineering
Management Science

Description
Optimal retirement planning with a focus on single and multilife annuities.
Links:
http://www.man.dtu.dk/Kalender/Arrangement?id=7bcb3a9c-ba75-4c70-9b1c-ee42c1e6aac2

Related event

Recent Research in Operations Research, Financial Engineering and Operations Management: Spring 2014
01/02/2014 → 30/06/2014
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

Generalforsamling i Dansk Byplanlaboratorium
Period: 21 May 2014
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre

Description
Generalforsamling Dansk Byplanlaboratorium

Related event

Generalforsamling i Dansk Byplanlaboratorium 2014
21/05/2014 → 21/05/2014
København, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Industry needs and engineering design research
Period: 21 May 2014
Saeeema Ahmed-Kristensen (Keynote speaker)
Department of Management Engineering
Technology and Innovation Management
Links:
http://www.designconference.org/?menu=5&subMenu=20 (keynote address)

Related event

13th International Design Conference
19/05/2014 → 22/05/2014
Dubrovnik, Croatia
Activity: Talks and presentations › Conference presentations

PhD Thesis committee: Economic Assessment of Rising Global Demand for Farmland (External organisation)
Period: 21 May 2014
Henrik Klinge Jacobsen (Chairman)
Department of Management Engineering
Systems Analysis
Energy Systems Analysis

Description
PhD evaluation committee Anna Kirstine Hvid
Body type: PhD evaluation committee

Related external organisation
PhD Thesis committee: Economic Assessment of Rising Global Demand for Farmland
Activity: Membership › Membership in review committee

Social kapital – teori, begreber og cases
Period: 21 May 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management

Description
Oplæg på RegH Ledertalent forløb

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

The shared building portfolio: An exploration and typology
Period: 21 May 2014
Rikke Brinkø Berg (Speaker)
Department of Management Engineering
Systems Analysis

Related event
CIB Facilities Management Conference: Using Facilities in an Open World - Creating Value for all Stakeholders
21/05/2014 → 23/05/2014
Kgs. Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

TML Netværksseminar
Period: 21 May 2014
Rikke Seim (Participant)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event
TML Netværksseminar
21/05/2015 → ...
Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

13th International Design Conference
Period: 19 May 2014 → 22 May 2014
Peter Bo Sarka (Participant)
Forskning i Relationel Koordinering
Period: 15 May 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management
Description
Oplæg for IDA Arbejdsmiljø

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Social Sciences & Medical Innovations
Period: 15 May 2014 → 17 May 2014
Angelos Balatsas Lekkas (Participant)
Department of Management Engineering
Description
Presentation entitled:
Patient safety and "the laboratory": Designing scenarios for medical simulation.
Documents:
Medical Innovations Programme3

Related event
Cykelkonference, Randers, 2014: Byfunktioner og struktur – Hvad betyder det for cyklingen?

Period: 14 May 2014

Thomas Alexander Sick Nielsen (Lecturer)

Department of Transport

Transport policy and behaviour

Description

CYKELKONFERENCE 2014 Bystrukturen og herunder lokaliseringen og udbuddet af byfunktioner har betydning for antallet af cykulture, cyklens 'konkurrencedygtighed i forhold til anden transport, samt cykelafstandene.

Documents:

Byfunktioner og struktur_Thomas Sick Nielsen

Links:

http://www.cyklistforbundet.dk/cykelviden/Konferenceindlaeg/A-Cykelkonference-2014/Byfunktioner-og-struktur

Related event

Dan nationale cykelkonference 2014
14/05/2014 → 15/05/2014
Randers, Denmark

Activity: Talks and presentations › Conference presentations

The scientific context: The UNEP Emissions Gap Report 2013: A global context on how the Cancun Agreement pledges relate to the 2°C target

Period: 14 May 2014 → 16 May 2014

Emmanuel Ackom (Invited speaker)

Department of Management Engineering

UNEP Risø Centre

Description

Objectives:
- Ensure that all participants understand the scientific context and UNFCCC origins of intended nationally determined contributions (hereafter referred to as contributions)
- Share experiences and best practices in developing contributions, and identify solutions to challenges being faced
- Address issues related to the underlying technical basis required to prepare robust, realistic and achievable contributions
- Identify support needs required to reach domestic agreement on contributions and follow-up actions in this regard

Participants:
Country representatives from the African Region, developed countries, multilateral and bilateral agencies, regional organisations, and resource experts.

Documents:
Africa_Dialogue_on_2015_Agreement_Final_agenda_may16[1]

Related event

Africa Technical Dialogue on Intended Nationally Determined Contrition to the 2015 Agreement under the UNFCCC
14/05/2014 → 16/05/2014
Accra, Ghana

Activity: Talks and presentations › Conference presentations

Virksomhedsværksted Alfa Laval

Period: 14 May 2014

Rikke Seim (Organizer)

Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event

Virksomhedsværksted Alfa Laval
14/05/2015 → …
Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

iPower Annual Conference 2014
Period: 13 May 2014
Per Sieverts Nielsen (Participant)
Department of Management Engineering
Systems Analysis
DTU Climate Centre
Centre for IT-Intelligent Energy Systems in Cities

Description
iPower conference

Related event

iPower Annual Conference 2014: Smart Grid in Residential Buildings
13/05/2014 → 14/05/2014
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

SETAC Europe 24th Annual Meeting
Period: 11 May 2014 → 15 May 2014
Nuno Miguel Dias Cosme (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Participation in the SETAC Europe 24th Annual Meeting 2014 in Basel, Switzerland

Related event

SETAC Europe 24th Annual Meeting
11/05/2014 → 15/05/2014
Basel, Switzerland
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Pesticides emissions modeling in LCA
Period: 10 May 2014
Nuno Miguel Dias Cosme (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

Description
Participation in Workshop: "Pesticides emissions modeling in LCA" in Basel, Switzerland

Related event

Pesticides emissions modeling in LCA
10/05/2014 → …
Basel, Switzerland
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Hyprovide workshop om brintsikkerhed**
**Period:** 2 May 2014
Frank Markert (Invited speaker)
Department of Management Engineering
Production and Service Management
Documents:
DTU-MAN_EUDP_Hyprovide_Workshop_2014

**Related event**

**Hyprovide workshop om brintsikkerhed**
02/05/2014 → …
Kongens Lyngby, Denmark
Activity: Talks and presentations › Conference presentations

**How to Bridge the Gap Between the Packaging Sector and Circular Economy**
**Period:** 1 May 2014 → 30 Apr 2016
Monia Niero (Participant)
Department of Management Engineering
Quantitative Sustainability Assessment

**Description**
Article written for Carlsberg Foundation’s website summarizing the outcomes of my postdoctoral project
Links:
Activity: Other

**Ny paraplyorganisation på Sjælland - baggrund og konsekvenser**
**Period:** 30 Apr 2014
Claus Hedegaard Sørensen (Lecturer)
Department of Transport
Transport policy and behaviour

**Description**
Documents:
Ny paraplyelseskab på Sjælland – baggrund og konsekvenser-ren

**Related event**

**Trafikkonferencen**
29/04/2014 → 30/04/2014
Roskilde, Denmark
Activity: Talks and presentations › Conference presentations

**Bestil en Forsker - Forskningens Døgn**
**Period:** 25 Apr 2014
Christine Ipsen (Panel member)
Department of Management Engineering

**Description**
Oplæg om ”videnarbejde og Stress - mellem begejstring og belastning”.
Oplæg ved Forskningens Døgn hos TopDanmark, Ballerup.
Links:
http://forsk.dk/

**Related event**

**Bestil en Forsker - Forskningens Døgn**
Period: 24 Apr 2014
Christine Ipsen (Panel member)
Department of Management Engineering

**Description**
Oplæg om "Videnarbejde og Stress - Mellem begejstring og belastning".
Oplæg ved Forskningens Døgn i SKAT, Østbanegade, København.

**Related event**

**Bestil en Forsker - Forskningens Døgn**
Period: 24 Apr 2014
Christine Ipsen (Participant)
Department of Management Engineering
Production and Service Management

**Description**
Oplæg om "Videnarbejde og Stress - mellem Begejstring og Belastning".
Oplæg ved Forskningens Døgn hos 3F, Kampmannsgade, København.

**Related event**

**Hjælper CDM-kreditter fattige lande**
Period: 24 Apr 2014
Jørgen Villy Fenhann (Lecturer)
Department of Management Engineering
UNEP Risø Centre

**Description**
Foredrag i Grobund aftenskolen
Foredrag på Christianshavns Gymnasium

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations
Nordic Science and Technology Studies  
Period: 24 Apr 2014 → 26 Apr 2014  
Claus L. Cramer-Petersen (Participant)  
Department of Management Engineering  
Technology and Innovation Management  

Related event  
Nordic Science and Technology Studies  
24/04/2013 → 26/04/2013  
Trondheim, Norway  
Activity: Attending an event › Participating in or organising a conference

International Research in Sustainable Organizational Interventions  
Period: 17 Apr 2014  
Christine Ipsen (Participant)  
Department of Management Engineering  
Production and Service Management  

Description  
Workshop with International Network of Sustainable Organizational Interventions.

Related event  
International Research in Sustainable Organizational Interventions  
17/04/2014 → 17/04/2014  
London, United Kingdom  
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Network meeting in the International Network of Sustainable Organizational Interventions (INSOI) (External organisation)  
Period: 17 Apr 2014  
Christine Ipsen (Participant)  
Department of Management Engineering  
Production and Service Management  
Degree of recognition: International  

Related external organisation  
Network meeting in the International Network of Sustainable Organizational Interventions (INSOI)  
Activity: Membership › Membership of research networks or expert groups

11th European Academy of Occupational Health Psychology conference 2014  
Period: 15 Apr 2014  
Christine Ipsen (Organizer)  
Department of Management Engineering  
Production and Service Management  

Description  
Presentation at Synposium: Organizational Health Intervention Research: Current Empirical Developments.

Related event  
11th European Academy of Occupational Health Psychology conference 2014  
14/04/2014 → 16/04/2014  
London, United Kingdom  
Activity: Attending an event › Participating in or organising a conference
11th European Academy of Occupational Health Psychology conference 2014
Period: 14 Apr 2014 → 16 Apr 2014
Signe Poulsen (Participant)
Department of Management Engineering
Management Science
Implementation and Performance Management

Description
EAOHP

Related event
11th European Academy of Occupational Health Psychology conference 2014
14/04/2014 → 16/04/2014
London, United Kingdom
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Transport Research Arena 2014
Period: 14 Apr 2014 → 17 Apr 2014
Kira Hyldekær Janstrup (Speaker)
Traffic modelling and planning
Department of Transport

Description
Unraveling the relationship between trauma types and crash characteristics: an error component logit approach
Documents:
TRA2014 - Janstrup Hels Kaplan Prato

Related event
Transport Research Arena 2014
14/04/2014 → 17/04/2014
Paris, France
Activity: Talks and presentations › Conference presentations

Transport Research Arena 2014
Period: 14 Apr 2014 → 17 Apr 2014
Kira Hyldekær Janstrup (Speaker)
Department of Transport
Traffic modelling and planning

Description
Understanding traffic crash under-reporting: linking police and medical records to individual and crash characteristics
Documents:
TRA 2014 - Janstrup Hels Kaplan Sommer Lauritsen

Related event
Transport Research Arena 2014
14/04/2014 → 17/04/2014
Paris, France
Activity: Talks and presentations › Conference presentations

Where did the work go? Assessing the psycho social work environment as a work flow process.
Period: 14 Apr 2014
Liv Starheim (Lecturer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Related event

11th European Academy of Occupational Health Psychology conference 2014
14/04/2014 → 16/04/2014
London, United Kingdom
Activity: Talks and presentations › Conference presentations

Smart grid an social science
Period: 10 Apr 2014
Meiken Hansen (Participant)
Department of Management Engineering
Technology and Innovation Management
Documents:
Extended abstract - Smart grid and households - how are household consumers represented in experimental projects

Related event

Smart grid an social science
10/04/2014 → 11/04/2014
Trondheim, Norway
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Eksekvering – Betydningen af performance management og social kapital
Period: 8 Apr 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management

Description
Oplæg for CfL

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Teaching and learning DTU
Period: 8 Apr 2014 → 11 Apr 2014
Laila Marianne Martinussen (Participant)
Department of Transport
Transport policy and behaviour

Related event

Teaching and learning DTU
08/04/2014 → 11/04/2014
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Lean, arbejdsmiljø, social kapital og relationel koordinering: Erfaringer fra forskningsprojekter
Period: 7 Apr 2014
Kasper Edwards (Invited speaker)
China's big energy questions - a China energy policy video workshop: Workshop Host and Speaker at the Asia Energy Conference
Period: 5 Apr 2014
Peggy Mischke (Invited speaker)
Department of Management Engineering
Energy Systems Analysis
Systems Analysis

Description
Invited speaker and workshop host
Documents:
China Energy Policy Video Workshop Teaser
Links:
http://asiaenergyconference.com/?page_id=10

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Forsknings i og på hospitaler
Period: 3 Apr 2014
Kasper Edwards (Invited speaker)
Department of Management Engineering
Production and Service Management

Description
Oplæg om forskning for Herlev Hospitals ledelse.

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

32nd International Conference in System Dynamics (Event)
Period: 1 Apr 2014 → 30 May 2014
Daniel Alberto Sepúlveda Estay (Member)
Department of Management Engineering
Management Science

Description
Submission Reviewer for the 32nd International Conference in System Dynamics
Degree of recognition: International
Documents:
32nd International System Dynamics Conference Abstracts and Booklet 2014
Related event

32nd International Conference in System Dynamics
20/07/2014 → 24/07/2014
Delft, Netherlands
Activity: Membership › Membership in review committee

British Academy of Management (BAM) Conference 2014 (Journal)
Period: Mar 2014 → Apr 2014
Peter Bo Sarka (Reviewer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Reviewer of two papers submitted to the conference.

Related journal

British Academy of Management (BAM) Conference 2014
Local database
Activity: Research › Peer review of manuscripts

Speaker at TEDx Bradford (UK)
Period: Mar 2014
Pedro Parraguez Ruiz (Invited speaker)
Engineering Systems Group
Department of Management Engineering
Production and Service Management

Description
Talk on Networked Design: Exploring the Collective Creation of Complex Systems
Links:

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

30th International Congress of Actuaries
Period: 30 Mar 2014
Agnieszka Karolina Konicz Bell (Speaker)
Department of Management Engineering
Management Science

Description
On improving pension product design
Documents:
presentation
paper
Links:
http://ica2014.org/

Related event

30th International Congress of Actuaries
Lean Product Development in Medium Sized Enterprises (External organisation)
Period: 28 Mar 2014
Anja Maier (Participant)
Department of Management Engineering
Production and Service Management
Engineering Systems Group
Description
Technical University of Munich (TUM), Institute for Product Development.

Body type: PhD Examination Committee
Degree of recognition: International

Related external organisation
Lean Product Development in Medium Sized Enterprises
Activity: Membership › Membership in review committee

Measures for the Diffusion of Solar PV are Aligned in Technology Action Plans for Six Countries in Africa
Period: 27 Mar 2014
Ivan Nygaard (Speaker)
Department of Management Engineering
UNEP Risø Centre
Related event
1st Africa Photovoltaic Solar Energy Conference and Exhibition
27/03/2014 → 29/03/2014
Durban, South Africa
Activity: Talks and presentations › Conference presentations

Workspace Design
Period: 27 Mar 2014
Ole Broberg (Organizer)
Engineering Systems Group
Production and Service Management
Department of Management Engineering
Description
Workspace Design: Integrating Work Environment Considerations into Design of New Workplaces.
Related event
Workspace Design: Integrating Work Environment Considerations into Design of New Workplaces
27/03/2014 → ...
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising a conference

Workspace Design
Period: 27 Mar 2014
Rikke Seim (Organizer)
Department of Management Engineering
Production and Service Management
Implementation and Performance Management

Description
Arrangement i IDA Arbejdsmiljø

Related event
Workspace Design: Integrating Work Environment Considerations into Design of New Workplaces
27/03/2014 → …
Copenhagen, Denmark

Activity: Attending an event › Participating in or organising a conference

Prizes:

3M Travelscholarship
Mette Møller (Recipient)
Department of Transport, Transport policy and behaviour

Details
Awarded date: 2012
Prize: Prizes, scholarships, distinctions

3rd World Congress of Positive Psychology Scholarship
David Hansen (Recipient)
Department of Management Engineering, Production and Service Management

Details
Awarded date: 20 May 2013
Granting Organisations: International Positive Psychology Association
Prize: Prizes, scholarships, distinctions

Alexander Foss MADE award
Sara Shafiee (Recipient)
Department of Mechanical Engineering, Engineering Design and Product Development, Operations Management

Description

Details
Awarded date: 30 Nov 2017
Degree of recognition: National
Prize: Prizes, scholarships, distinctions

APM Hebert Walton Award 2008
Joana Geraldi (Recipient)
Department of Management Engineering, Engineering Systems

Description
British award for the best PhD in project management

I won the award for the year of 2008.

Details
Awarded date: 2008
Prize: Prizes, scholarships, distinctions
Best overall paper award. ITEA Conference on Transportation Economics, Oslo, 2015.
Mogens Fosgerau (Recipient)
Transport policy and behaviour, Department of Management Engineering

Details
Awarded date: 2015
Prize: Prizes, scholarships, distinctions

Best paper award. BIVEC-GIVET Transport Research Day, 2007
Mogens Fosgerau (Recipient)
Transport policy and behaviour, Department of Management Engineering

Details
Awarded date: 2007
Prize: Prizes, scholarships, distinctions

Best paper award. Kuhmo-Nectar Conference and Summer School, Amsterdam 2008
Mogens Fosgerau (Recipient)
Transport policy and behaviour, Department of Management Engineering

Details
Awarded date: 2008
Prize: Prizes, scholarships, distinctions

Best reviewer award 2013
Joana Geraldi (Recipient)
Department of Management Engineering, Engineering Systems

Details
Awarded date: 2013
Granting Organisations: Elsevier International Journal of Managing Projects in Business
Prize: Prizes, scholarships, distinctions

Best Student Paper Award
Giulia Nardelli (Recipient)
Department of Management Engineering, Management Science, Implementation and Performance Management

Description

Details
Awarded date: 20 Aug 2012
Degree of recognition: International
Granting Organisations: Information Systems Research in Scandinavia (IRIS) Association
event: 3rd Scandinavian Conference of Information Systems (SCIS)
Prize: Prizes, scholarships, distinctions

Best Student Thesis 2013
Niels-Christian Fink Bagger (Recipient)
Department of Management Engineering, Management Science, Operations Research

Details
Awarded date: 2013
Degree of recognition: National
Granting Organisations: DONG Energy A/S
Prize: Prizes, scholarships, distinctions
Best Thesis in Operations Research 2013
Niels-Christian Fink Bagger (Recipient)
Department of Management Engineering, Management Science, Operations Research

Details
Awarded date: 29 Apr 2013
Degree of recognition: National
Granting Organisations: Danish Operations Research Society (DORS)
event: DORS - General Assembly
Prize: Prizes, scholarships, distinctions

DTU’s Young Researcher Award
Kira Hyldekaer Janstrup (Recipient)
Department of Management Engineering, Transport DTU, Transport Modelling

Details
Awarded date: 30 Sep 2016
Granting Organisations: Technical University of Denmark
event: PhD graduation ceremony
Prize: Prizes, scholarships, distinctions

European FM researcher of the year
Rikke Brinkø Berg (Recipient)
Department of Management Engineering, Systems Analysis, DTU Climate Centre

Description
FM Researcher of the year is an award, which recognises the value of research being undertaken across Europe. The research must address the EuroFM research agenda and contribute to its overall objectives to advance knowledge in FM and promote its effective application in practice and education. Read more about the competition below.

Details
Awarded date: 8 Jun 2016
Prize: Prizes, scholarships, distinctions

European FM Researcher of the Year
Giulia Nardelli (Recipient)
Department of Management Engineering, Production and Service Management, Centre for Facilities Management, Implementation and Performance Management

Description
Awarded during European Facilities Management Conference (EFMC) 2014 in Berlin (DE).

Details
Awarded date: Jun 2014
Degree of recognition: International
Granting Organisations: EuroFM
Prize: Prizes, scholarships, distinctions

Hedorfs Fonds Pris for Transportforskning, 2011
Mogens Fosgerau (Recipient)
Transport policy and behaviour, Department of Management Engineering

Details
Awarded date: 2011
Prize: Prizes, scholarships, distinctions

Human Factors Engineering and Systems Design with Federal University of Rio de Janeiro/COPPE: International Network Program
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems
**Idella Fonden Travelling Grant**

Erika Buonansega (Recipient)
Department of Management Engineering, Technology and Innovation Management

**Description**
Travel scholarship of DKK 40,000 granted for research stay

**Details**
Awarded date: 2011
Prize: Prizes, scholarships, distinctions

**IEA Fellow**

Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

**Description**
The IEA Fellowship is given to recognize extraordinary or sustained, superior accomplishments of an individual within the human factors and ergonomics field.

**Details**
Awarded date: 2016
Granting Organisations: International Ergonomics Association
Prize: Prizes, scholarships, distinctions

**INCOSE Working Group Award**

Josef Oehmen (Recipient)
Department of Management Engineering, Engineering Systems

**Description**
Award for my work as the chair of INCOSE’s Lean Systems Engineering Working Group

**Details**
Awarded date: 2012
Degree of recognition: International
Granting Organisations: The International Council on Systems Engineering
Prize: Prizes, scholarships, distinctions

**INCOSE Working Group Award**

Josef Oehmen (Recipient)
Department of Management Engineering, Engineering Systems

**Description**
Award for my work as chairman of INCOSE’s Working Group on Lean Systems Engineering

**Details**
Awarded date: 2011
Degree of recognition: International
Granting Organisations: The International Council on Systems Engineering
Prize: Prizes, scholarships, distinctions

**Industrial PhD scholarship with Alectia Consulting: Integration of human factors knowledge into engineering design processes**

Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

**Details**
Awarded date: 2009
Granting Organisations: Danish Agency for Science Technology and Innovation
INFORMS Railway Application Section 2016 Student Paper Award - Second Place
Fabrizio Cerreto (Recipient), Otto Anker Nielsen (Recipient) & Steven Harrod (Recipient)
Department of Management Engineering, Transport DTU, Transport Modelling, Management Science

Description
RAS (Railway Applications Section), a subdivision of INFORMS (Institute for Operations Research and Management Sciences), is sponsoring a student research paper contest on analytics and fact-based decision making in railway applications.

Operations Research (OR) and the Management Sciences (MS) are professional disciplines that deal with the application of information technology for informed decision making. OR/MS professionals aim to provide rational bases for decision making by seeking to understand and structure complex situations and to use this understanding to predict system behavior and improve system performance. Much of this work is done using analytical and numerical techniques to develop and manipulate mathematical and computer models of organizational systems composed of people, machines, and procedures. RAS provides a forum for bringing together practitioners, consultants, and academics interested in applying OR/MS techniques to the railroad industry. RAS activities include roundtables, paper sessions at INFORMS national meetings, workshops, and focus groups. Roundtables provide attendees with a unique opportunity to explore, in-depth, topics ranging from eBusiness to simulation to network modeling together with a panel of experts. Paper sessions feature the latest in OR/MS research pertaining to the rail industry.

Details
Awarded date: 13 Nov 2016
Degree of recognition: International
Granting Organisations: INFORMS
event: INFORMS Nashville 2016 Annual Meeting

Innovationsfonden Prize 2018
Sara Shafiee (Recipient)
Department of Mechanical Engineering, Engineering Design and Product Development, Operations Management

Description
Erhvervsforsker Prisen Honors the most talented Business PhDs or Business Postdocs from the Innovation Fund's talent program, which has combined a high level of research, with strong business understanding and has created a business impact for a company.

Details
Awarded date: 2018
Degree of recognition: National

IPMA Young Researcher Award 2008
Joana Geraldi (Recipient)
Department of Management Engineering, Engineering Systems

Description
International award to the best PhD student thesis of the year.

My thesis won the award for the year of 2008.

Details
Awarded date: 2008
Granting Organisations: IPMA (International Project Management Association)

Journal Paper of the Year in Production Planning & Control
Josef Oehmen (Recipient)
Department of Management Engineering, Engineering Systems

Description
One of my articles at PPC won the "journal paper of the year" award.
**Kriton Curi Award**

Sandra Roxana Aparcana Robles (Recipient)
Department of Management Engineering, UNEP DTU Partnership

**Description**
Award for the best paper on developing country waste management issues

**Details**
Awarded date: 2010
Degree of recognition: International
Prize: Prizes, scholarships, distinctions

**Method for knowledge transfer from the operations phase of offshore units into design, planning, and optimization**
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

**Description**
Two year research project

**Details**
Awarded date: 6 Oct 2017
Degree of recognition: International
Granting Organisations: International Waste Working Group (IWWG)
event: Sardinia 2017, 16th International Waste Management and Landfill Symposium
Prize: Prizes, scholarships, distinctions

**Methods for employee participation in product innovation.**
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

**Description**
Two year research project

**Details**
Awarded date: 2014
Granting Organisations: The Danish Maritime Fund
Prize: Prizes, scholarships, distinctions

**Nomination: DTU Teacher of the Year**
Josef Oehmen (Recipient)
Department of Management Engineering, Engineering Systems

**Description**
Nomination for DTU’s Teacher of the Year Award 2018

**Details**
Awarded date: 14 May 2018
Degree of recognition: National
Prize: Prizes, scholarships, distinctions

**Nomination: DTU Teacher of the Year**
Josef Oehmen (Recipient)
Department of Management Engineering, Engineering Systems

**Description**
Nominated for DTU’s Teacher of the Year Award 2015.

**Details**
Nordic Ergonomics Society Great Prize
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

Details
Awarded date: 2015
Degree of recognition: National
Prize: Prizes, scholarships, distinctions

Otto Mønsteds Fonden
David Hansen (Recipient)
Department of Management Engineering, Production and Service Management

Details
Awarded date: 2013
Granting Organisations: Otto Mønsteds Fonden
Prize: Prizes, scholarships, distinctions

Otto Mønsteds Fonden Conference Scholarship
Pedro Parraguez Ruiz (Recipient)
Engineering Systems Group, Department of Management Engineering, Production and Service Management

Description
Grant to finance conference abroad

Details
Awarded date: 2014
Granting Organisations: Otto Mønsteds Fonden
Prize: Prizes, scholarships, distinctions

Outstanding contribution
Peter Bo Sarka (Recipient)
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Description
Award for recognition that my paper, ENGINEERS ARE USING SOCIAL MEDIA FOR WORK PURPOSES, was rated in the top 10% papers based on reviewers’ scores.

Details
Awarded date: 2014
Prize: Prizes, scholarships, distinctions

PhD Scholarship: Interactive simulation: A new means for promoting occupational health and safety in the hospital sector.
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

Details
Awarded date: 2013
Granting Organisations: The Working Environment Research Fund
Prize: Prizes, scholarships, distinctions

Professor P. H. Bendtsen’s Trafikforskningspris
Michael Bruhn Barfod (Recipient)
Department of Transport, Decision Modelling

Details
Awarded date: 2012
Degree of recognition: National
Prize: Prizes, scholarships, distinctions

Prof. P.H. Bendtsens Transport Research Award
Mikkel Thorhauge (Recipient)
Department of Management Engineering, Transport DTU, Transport Modelling

Details
Awarded date: 22 Aug 2016
Degree of recognition: National
event: Trafikdage 2016
Prize: Prizes, scholarships, distinctions

Project Management Journal Paper of the Year Award 2017
Christian Thuesen (Recipient), Joana Geraldi (Recipient) & Anders Fogh Jensen (Recipient)
Department of Management Engineering, Engineering Systems

Description
Two Associate Professors from the Engineering Systems Division, Christian Thuesen and Joana Geraldi, received the "Best Paper 2016" Award from the Project Management Journal. The honoured publication "The projectification of everything: projects as a human condition" was written in collaboration with the philosopher Anders Jensen.

Details
Awarded date: 26 Jun 2017
Granting Organisations: Project Management Institute
event: International Research Network on Organizing by Projects, IRNOP 2017
Prize: Prizes, scholarships, distinctions

Promoting the occupational health services efforts in relation to technological changes in companies
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

Description
Research project

Details
Awarded date: 2001
Granting Organisations: The Working Environment Research Fund
Prize: Prizes, scholarships, distinctions

Research & Collaboration Award of ETH Zurich
Josef Oehmen (Recipient)
Department of Management Engineering, Engineering Systems

Description
My work on public perception risks in supply chains won the "Research & Collaboration Award" of the MTEC Department, ETH Zurich

Details
Awarded date: 2009
Degree of recognition: National
Granting Organisations: ETH Zurich
Prize: Prizes, scholarships, distinctions

Scholarship awarded by the H-STAR program
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

Description
Visiting Researcher Stanford University: Center for Design Research

Details
Awarded date: 1 Sep 2009
Second place at the international competition Descience
Pedro Parraguez Ruiz (Recipient)
Engineering Systems Group, Department of Management Engineering, Production and Service Management

Description
International competition staged at MIT Media Lab. Descience's purpose is to create science inspired design that can effectively communicate complex scientific concepts to the general public.

Details
Awarded date: Aug 2014
Granting Organisations: Descience
Prize: Prizes, scholarships, distinctions

Shigeo Shingo Research Award
Josef Oehmen (Recipient)
Department of Management Engineering, Engineering Systems

Description
Prestigious Shigeo Shingo Research Award for my work on lean engineering program management.

Details
Awarded date: 2013
Degree of recognition: International
Granting Organisations: Jon M. Huntsman School of Business, Utah State University
Prize: Prizes, scholarships, distinctions

The 2nd Annual Ted Brown and Hal Hendrick Young Investigators Award
Signe Poulsen (Recipient)
Department of Management Engineering, Production and Service Management

Description
This award is for young investigators in recognition of their research and project efforts within the ODAM (Organizational Design And Management) field, and to support their career development in the ODAM area.

Details
Awarded date: 20 Aug 2014
Prize: Prizes, scholarships, distinctions

The Idella Foundation Travel Scholarship
Pedro Parraguez Ruiz (Recipient)
Engineering Systems Group, Department of Management Engineering, Production and Service Management

Description
Awarded Idella's travel scholarship to finance research abroad period at MIT.

Details
Awarded date: 1 Apr 2013
Granting Organisations: Idella
Prize: Prizes, scholarships, distinctions

The TIM Division Award for Best Reviewer 2017 (AOM)
Sabrina Woltmann (Recipient)
Department of Applied Mathematics and Computer Science , Department of Management Engineering, Technology and Innovation Management

Description
TIM reviewers that distinguished themselves for the timeliness and constructiveness of their comments. It is based both on authors' evaluation and the TIM officers' own reading of your reports.
Details  
Awarded date: 8 Aug 2017  
Event: 77th Annual meeting of the Academy of Management  
Prize: Prizes, scholarships, distinctions  

Third best paper and presentation at ECTRI-FERSI Young Researchers Seminar  
Kira Hyldækær Janstrup (Recipient)  
Department of Management Engineering, Transport DTU, Transport Modelling  

Details  
Awarded date: 7 Jun 2013  
Granting Organisations: Forum of European Road Safety Institutes (FERSI)  
Event: FERSI Young Researchers' Seminar  
Prize: Prizes, scholarships, distinctions  

TRAVISIONS COMPETITION 2016: Second place in Rail  
Fabrizio Cerreto (Recipient)  
Traffic modelling and planning, Department of Management Engineering  

Description  
The student competition aimed at university and technical institute students pursuing bachelor degrees and higher. Initially, participants were invited to submit an abstract under one of the TRA2016 conference topics: Environment – Decarbonisation, Sustainability and Energy Efficiency Vehicles & Vessels Technologies, Design and Production Urban and Long-Distance People Mobility - Systems and Services Freight Transport and Logistics Safe, Secure and Resilient Transport Systems Transport Infrastructures Human Factors, Socio-Economics and Foresights Automation and Connectivity Enabling Environment for Innovation Implementation All participants were invited to register their ideas and submit a Title and a short abstract by January 2016. They also had until the end of January to develop and submit their idea, which was meant to be a report based on the Final Project Template accompanied by any supporting documents. This was followed by an Evaluation of Ideas period during which a judging panel determined which were the top three ideas per mode. Some 130 students participated, submitting a total of 107 student projects from 14 different EU countries and 35 different universities. Here are the three winners of each category.  

http://www.travisions.eu  

Details  
Awarded date: 18 Apr 2016  
Degree of recognition: International  
Granting Organisations: European Commission  
Event: 6th Transport Research Arena  
Prize: Prizes, scholarships, distinctions  

TÜV Süd Foundation Professor  
Josef Oehmen (Recipient)  
Department of Management Engineering, Engineering Systems  

Description  
1 year visiting professorship at the Institute of Advanced Studies, Technical University of Munich  

Details  
Awarded date: 2012  
Degree of recognition: International  
Prize: Prizes, scholarships, distinctions  

US Defense Acquisition University Research Competition Winner  
Josef Oehmen (Recipient)  
Department of Management Engineering, Engineering Systems  

Description  
Winner of the 2012 US DAU Research Competition for my work on risk-based pricing of defense contracts  

Details  
Awarded date: 2012  
Degree of recognition: International
Prize: Prizes, scholarships, distinctions

**Workspace Design II: Development of a new dialogue-oriented design practice**
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

**Description**
Three year research project

**Details**
Awarded date: 2010
Granting Organisations: The Working Environment Research Fund
Prize: Prizes, scholarships, distinctions

**Workspace Design I: User involvement and work life integration into technological and organizational change processes.**
Ole Broberg (Recipient)
Copenhagen Center for Health Technology, Department of Management Engineering, Engineering Systems

**Description**
Three year research project

**Details**
Awarded date: 2005
Granting Organisations: The Working Environment Research Fund
Prize: Prizes, scholarships, distinctions

**Press clippings:**

**Mød kunder og samarbejdspartner digitalt**
Christine Ipsen
27/12/2017

**Description**
Den teknologiske udvikling har flyttet såvel kunder som samarbejdspartnere over på de digitale platforme, og det giver nye muligheder og udfordringer til virksomhederne. Det er nødvendigt at møde kunderne hvor de er, fortæller eksperter

Department of Management Engineering, Management Science, Implementation and Performance Management

**Media contribution (1)**

**Berlingske Business**
27/12/2017
Denmark, Web
https://www.business.dk/annonce/moed-kunder-og-samarbejdspartner-digitalt
Christine Ipsen
Press / Media

**Viser nyt studie virkelig, at kvinder er bedre til at køre bil end mænd?**
Laila Marianne Martinussen
30/11/2017
Department of Management Engineering, Technology and Innovation Management, Transport DTU

**Media contribution (1)**

**Viser nyt studie virkelig, at kvinder er bedre til at køre bil end mænd?**
30/11/2017
Mandag Morgen (National), Denmark, Web
Rasmus Kerm-Jespersen og Andreas Grimstrup Ragn
https://www.mm.dk/tjekdet/artikel/viser-nyt-studie-virkelig-at-kvinder-er-bedre-til-at-koere-bil-end-maend
Laila Marianne Martinussen
Press / Media
København bruger ti gange så meget på skolerenoveringer som Skanderborg
Per Anker Jensen
12/11/2017

Description

Artiklerne "Tjek din kommune: Så meget har kommunerne brugt på at renovere og bygge nye skoler" og "København bruger ti gange så meget på skolerenoveringer som Skanderborg.", begge med citater fra Per Anker Jensen baseret på TV-interview med Per, blev bragt på dr.dk den 18. november i tilknytning til hovedhistorie i TV-avisen kl. 18:30.

Subject

Artiklerne "Tjek din kommune: Så meget har kommunerne brugt på at renovere og bygge nye skoler" og "København bruger ti gange så meget på skolerenoveringer som Skanderborg.", begge med citater fra Per Anker Jensen baseret på TV-interview med Per, blev bragt på dr.dk den 18. november i tilknytning til hovedhistorie i TV-avisen kl. 18:30.

Media contribution (1)

København bruger ti gange så meget på skolerenoveringer som Skanderborg
12/11/2017
dr.dk, Denmark
Artiklerne "Tjek din kommune: Så meget har kommunerne brugt på at renovere og bygge nye skoler" og "København bruger ti gange så meget på skolerenoveringer som Skanderborg.", begge med citater fra Per Anker Jensen baseret på TV-interview med Per, blev bragt på dr.dk den 18. november i tilknytning til hovedhistorie i TV-avisen kl. 18:30.
Per Anker Jensen
Press / Media

Tjek din kommune: Så meget har kommunerne brugt på at renovere og bygge nye skoler
Per Anker Jensen
12/11/2017 → 12/11/2017

Description

Artiklerne "Tjek din kommune: Så meget har kommunerne brugt på at renovere og bygge nye skoler" og "København
bruger ti gange så meget på skolerenoveringer som Skanderborg.", begge med citater fra Per Anker Jensen baseret på TV-interview med Per, blev bragt på dr.dk den 18. november i tilknytning til hovedhistorie i TV-avisen kl. 18:30.

Subject

Artiklerne "Tjek din kommune: Så meget har kommunerne brugt på at renovere og bygge nye skoler" og "København bruger ti gange så meget på skolerenoveringer som Skanderborg.", begge med citater fra Per Anker Jensen baseret på TV-interview med Per, blev bragt på dr.dk den 18. november i tilknytning til hovedhistorie i TV-avisen kl. 18:30.

Department of Management Engineering, Management Science, Implementation and Performance Management

Media contributions (2)

Tjek din kommune: Så meget har kommunerne brugt på at renovere og bygge nye skoler
12/11/2017
dr.dk, Denmark
Artiklerne "Tjek din kommune: Så meget har kommunerne brugt på at renovere og bygge nye skoler" og "København bruger ti gange så meget på skolerenoveringer som Skanderborg.", begge med citater fra Per Anker Jensen baseret på TV-interview med Per, blev bragt på dr.dk den 18. november i tilknytning til hovedhistorie i TV-avisen kl. 18:30.
Per Anker Jensen
Department of Management Engineering, Management Science, Implementation and Performance Management

Masser af nedslidte skoler i hele landet
Per Anker Jensen
11/11/2017
Department of Management Engineering, Management Science, Implementation and Performance Management

Media contribution (1)

Masser af nedslidte skoler i hele landet
11/11/2017
Denmark
Per Anker Jensen
Press / Media

Nyt projekt skal hjælpe områder, der er truet af oversvømmelse
Morten Andreas Dahl Larsen
03/11/2017
Department of Management Engineering, Systems Analysis

Media contribution (1)

Nyt projekt skal hjælpe områder, der er truet af oversvømmelse
03/11/2017
dr.dk (National), Denmark, Web
Morten Andreas Dahl Larsen
Press / Media
11 veje udstyres med stærkasser
Laila Marianne Martinussen
28/10/2017
Department of Management Engineering, Technology and Innovation Management, Transport DTU

Media contribution (1)

11 veje udstyres med stærkasser
28/10/2017
Tv2 news (National), Denmark, Television
1 minute, 17 seconds
Laila Marianne Martinussen
Press / Media

Dårlige veje i Odense kommune kan betyde flere uheld
Kira Hyldekar Janstrup
25/10/2017
Department of Management Engineering, Transport Modelling, Transport DTU

Media contribution (1)

Dårlige veje i Odense Kommune kan betyde flere uheld
25/10/2017
DR, Denmark, Web
https://www.dr.dk/nyheder/regionale/fyn/daarlige-veje-i-odense-kommune-kan-betyde-flere-uheld
Kira Hyldekar Janstrup
Department of Management Engineering, Transport DTU, Transport Modelling
Press / Media

Distanceledelse: Konsulenter uden for kontoret kan true produktiviteten
Christine Ipsen
27/09/2017

Description
Dårligt arbejdsmiljø blokerer for at yde en god indsats. Det skaber frustration – i særdeleshed, når man ikke deler adresse med chefen, og han tilmed ignorerer problemet
Department of Management Engineering, Management Science, Implementation and Performance Management

Media contribution (1)

Ingeniøren
27/09/2017
Ingeniøren (National), Denmark, Web
Lene Wessel
Christine Ipsen
Press / Media

Conceptual Modelling for Product Configuration Systems - Defence
Sara Shafiee
11/09/2017

Description
Ph.D. Defence
https://www.youtube.com/watch?v=XLebQfHXNSM&t

Subject
https://www.youtube.com/watch?v=XLebQfHXNSM&t
Department of Mechanical Engineering, Department of Management Engineering

Media contribution (1)

Conceptual Modelling for Product Configuration Systems - Defence
11/09/2017
Morgendagens ledere har styr på faciliteterne
Per Anker Jensen
04/09/2017

Description
Artiklen "Morgendagens ledere har styr på faciliteterne" med billede af Per Anker Jensen og primært baseret på interview med Per indgik i kampagnen Analyse og Helse, som udkom med Børsen den 4 september 2017.

Subject
Artiklen "Morgendagens ledere har styr på faciliteterne" med billede af Per Anker Jensen og primært baseret på interview med Per indgik i kampagnen Analyse og Helse, som udkom med Børsen den 4 september 2017.

Department of Management Engineering, Management Science, Implementation and Performance Management

Media contribution (1)

Morgendagens ledere har styr på faciliteterne
04/09/2017
Børsen, Kampagnetillæg Analyse og Helse, Denmark
Per Anker Jensen
Press / Media

Three challenges facing managers
Christine Ipsen
08/08/2017

Description
The fourth industrial revolution and the changes it requires of companies place considerable demands on management

Department of Management Engineering, Management Science, Implementation and Performance Management

Media contribution (1)

Dynamo
08/08/2017
Dynomo (National), Denmark, Print
http://www.dtu.dk/english/news/2017/08/dynamo-theme-6-three-challenges-facing-managers?id=f02b6739-6e17-417f-a853-0a26603f5ef6
Christine Ipsen
Press / Media

Hot topics fra international innovationsekspert
Kasper Edwards
26/06/2017
Department of Management Engineering, Management Science, Implementation and Performance Management

Media coverage (1)

Hot topics fra international innovationsekspert
26/06/2017
Dansk Industri Nyhedsbrev (National), Denmark, Web
Liv Thøger
http://di.dk/Virksomhed/Innovation/innovationforside/nyhederinnovation/Pages/Hot-topics-fra-international-innovationsekspert.aspx
Kasper Edwards
Press / Media
**Profitmål stresser ansatte**
Kasper Edwards
16/06/2017
Department of Management Engineering, Management Science, Implementation and Performance Management

**Media coverage (1)**

**Profitmål stresser ansatte**
16/06/2017
Magisterbladet (National), Denmark, Web
Martin Ejlersen
http://magisterbladet.dk/magisterbladet/2017/062017/062017_p32
Kasper Edwards

**Relations**
Projects:
Sammenhænge mellem produktivitet og psykisk arbejdsmiljø
Press / Media

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**SLÄPP Taget!**
Kasper Edwards
14/06/2017
Department of Management Engineering, Management Science, Implementation and Performance Management

**Media coverage (1)**

**SLÄPP TAGET!**
14/06/2017
chefstidningen (International), Sweden, Print
Jennie Aquilonius
http://chefstidningen.se/
Kasper Edwards

**Relations**
Projects:
Udvikling af kvalitet, samarbejde, aktivitet samt relationel koordination på operationsgangen, Rigshospitalets, Hjertecenter
Press / Media

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**Nyt OUH: Chefflugt kan blive dyrt**
Christian Thuesen
29/05/2017

**Description**
Expert interview
Department of Management Engineering, Engineering Systems

**Media contribution (1)**

**Nyt OUH: Chefflugt kan blive dyrt**
29/05/2017
TV2 Fyn (Regional), Denmark, Television
Christian Thuesen
Press / Media

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**Webinar: Recovery of Operations From Hacker Attacks: A Structure for Response**
Daniel Alberto Sepúlveda Estay & James Blanley Rice
15/03/2017

**Description**
Cyber attacks on supply chains are a constant threat to organizations. News media are regularly reporting cyber attacks to supply chains that result in data theft or denial of service. Examples abound, such as the theft of credit card data for 70 million customers from Target in 2013, and a sophisticated distributed attack that blocked the websites of major
Companies in the east-US such as Amazon, Starbucks and PayPal, during most the 21st of October 2016. Although relevant, this coverage often overshadows cyber-attacks that affect supply chain operations, which continue to occur without media attention. This is giving hackers free range to refine and practice their techniques for increased penetration and damage, resulting in a whole different range of disruptions such as container theft, intervention of plant operation, or misallocation of payments, for example. The MIT Center for Transportation & Logistics (CTL) will host a webinar to address hacker-related vulnerabilities in supply chain operations. At the root of this problem lies the structure of data exchanges between supply chain partners. Key questions for supply chain managers include:

- How does your supply chain manage these data exchanges?
- How much are you assigning these problems to IT even though they have direct impact on operations?
- How does your supply chain prevent these attacks, or react when these attacks happen?
- Is your supply chain merely relying on external insurance, or do you understand how these exchanges can be designed and controlled in cases of attack for improved recovery?

Dr. Jim Rice and Daniel Sepulveda, PhD student, will address these questions, and talk about research findings that offer a deeper understanding of the structures that supply chains can use to improve their response from hacker attacks so as to minimize operational disruption and allow a more efficient recovery.

Daniel Alberto Sepúlveda Estay & James Blanley Rice
Center for Transportation and Logistics at the Massachusetts Institute of Technology

Webinar: Recovery of Operations From Hacker Attacks: A Structure for Response
15/03/2017
Webinar (International), United States, Web
Christine Adams / Daniel Sepulveda
44:40
https://www.youtube.com/watch?v=zsmpjNRclfI&t=152s

Cyber attacks on supply chains are a constant threat to organizations. News media are regularly reporting cyber attacks to supply chains that result in data theft or denial of service. Examples abound, such as the theft of credit card data for 70 million customers from Target in 2013, and a sophisticated distributed attack that blocked the websites of major companies in the east-US such as Amazon, Starbucks and PayPal, during most the 21st of October 2016. Although relevant, this coverage often overshadows cyber-attacks that affect supply chain operations, which continue to occur without media attention. This is giving hackers free range to refine and practice their techniques for increased penetration and damage, resulting in a whole different range of disruptions such as container theft, intervention of plant operation, or misallocation of payments, for example. The MIT Center for Transportation & Logistics (CTL) will host a webinar to address hacker-related vulnerabilities in supply chain operations. At the root of this problem lies the structure of data exchanges between supply chain partners. Key questions for supply chain managers include: How does your supply chain manage these data exchanges? How much are you assigning these problems to IT even though they have direct impact on operations? How does your supply chain prevent these attacks, or react when these attacks happen? Is your supply chain merely relying on external insurance, or do you understand how these exchanges can be designed and controlled in cases of attack for improved recovery? Dr. Jim Rice and Daniel Sepulveda, PhD student, will address these questions, and talk about research findings that offer a deeper understanding of the structures that supply chains can use to improve their response from hacker attacks so as to minimize operational disruption and allow a more efficient recovery.

Daniel Alberto Sepulveda Estay & James Blanley Rice
Center for Transportation and Logistics at the Massachusetts Institute of Technology

Press / Media
Working in Denmark has allowed me to enjoy my time with my family
Timothy Clifford Farrell
13/02/2017
Department of Management Engineering, UNEP DTU Partnership

Media contribution (1)

Working in Denmark has allowed me to enjoy my time with my family
13/02/2017
The Local, Web
Melanie Haynes
http://www.thelocal.dk/20170213/working-denmark-enjoy-time-with-family
Timothy Clifford Farrell
Department of Management Engineering, UNEP DTU Partnership

Expert comment on controversy over welfare costs of particle emissions from wood stoves: "Skatteministeriet afviser vismands-kritik: Vi bruger officielle brændeovnstal"
Henrik Klinge Jacobsen
08/02/2017

Description
Skatteministeriet afviser vismands-kritik: Vi bruger officielle brændeovnstal

Morten Øyen [8. februar 2017 kl. 3:30]

Subject
Ekspert: Interessant med nye tal

Altinget har også fremlagt vismændenes kritik til de tre eksperter i afgifts- og tilskudsanalysens referencegruppe. Her har kun en, Henrik Klinge Jacobsen, professor MSO ved DTU, haft mulighed for at svare.
Han vurderer ikke, at kritikken af Skatteministeriet ændrer "markant" på den kvalitative konklusion: Der er en samfundsmæssig gevinst ved at reducere partikelemisioner fra brændeovne i tæt befolkede områder, selv når der tages hensyn til omkostninger ved reguleringen.
"Men det er selvfølgelig interessant at se, hvor meget et andet og nyere bud på skadesomkostninger påvirker samfundsøkonomiske gevinster ved regulering i forhold til omkostninger ved reguleringen," skriver Henrik Klinge Jacobsen i et svar til Altinget.

Department of Management Engineering, Systems Analysis

Media contribution (1)

Comment to debate on costs of particle emissions from wood stoves
08/02/2017
Altinget, Denmark
Comment in article: Altinget
Henrik Klinge Jacobsen
Department of Management Engineering, Systems Analysis

Kejser på P1: Vejvrede
Mette Møller
25/01/2017
Department of Management Engineering, Technology and Innovation Management, Transport DTU

Media contribution (1)

Kejser på P1: Vejvrede
25/01/2017
DR, Radio
Tikøb-virksomhed med fokus på kloak
Per Skougaard Kaspersen
18/01/2017

Description
Interview om vores samarbejde med virksomheden LNH Water i Water DTU VIS projektet UPS
(Udvikling af Planlægningsværktøj til prioritering af klimatilpasning og Skybrudsløsninger indenfor urban afstrømning)

Subject
Innovationsprojekter
Department of Management Engineering, Systems Analysis

Media contribution (1)
Tikøb-virksomhed med fokus på kloak
18/01/2017
Frederiksborg Amts Avis, Print
Per Skougaard Kaspersen
Department of Management Engineering, Systems Analysis
Press / Media

Energy-saving ideas from science
Timothy Clifford Farrell
06/01/2017

Subject
Energy Efficiency
Department of Management Engineering, UNEP DTU Partnership

Media contribution (1)
Energy-saving ideas from science
06/01/2017
NDR, Radio
Hartmut Grawe
5 minutes
http://www.ndr.de/info/Energie-Spar-Ideen-aus-der-Wissenschaft,audio308036.html
Timothy Clifford Farrell
Department of Management Engineering, UNEP DTU Partnership
Press / Media

DTU-forskere: Forsyningsstrategi er risikabel for samfundsøkonomien
Daniel Møller Sneum & Marie Münster
03/01/2017
Department of Management Engineering, Systems Analysis, Energy Systems Analysis

Media contribution (1)
DTU-forskere: Forsyningsstrategi er risikabel for samfundsøkonomien
03/01/2017
Altinget.dk (National), Denmark, Web
http://www.altinget.dk/energi/artikel/dtu-forskere-forsyningsstrategi-er-risikabel-for-samfundsoekonomien
Daniel Møller Sneum & Marie Münster
Department of Management Engineering, Systems Analysis, Energy Systems Analysis
Press / Media

Webinar: Visuals Matter: Using Effective Visuals to Support Project and Portfolio Decisions
Joana Geraldi
10/12/2016
Dr Joana Geraldi (associate professor at the Engineering Systems Division) and Dr Mario Arlt (newly appointed adjunct professor) conducted a live webinar broadcasted by PMI and Projectmanagement.com on the impact of visuals on cognition and communication in projects, programs and portfolio decisions and communication practices. The goal of the webinar was to increase project practitioners’ and scholars’ awareness about the importance of visuals and to provide guidance on how to use visuals strategically. The webinar is based on a book published in 2015 about the topic. It is available for viewing at the projectmanagement.com, and has been viewed by over 3,000 people (as of January 2017).

Department of Management Engineering, Engineering Systems

**Webinar: Visuals Matter: Using Effective Visuals to Support Project and Portfolio Decisions**
10/12/2016
PMI and ProjectManagement.com, Web
1 hour
Joana Geraldi
Department of Management Engineering, Engineering Systems
Press / Media

**Ny forskning: Underbevidstheden sender dig fuld ud i trafikken**
Laila Marianne Martinussen
02/12/2016

**Subject**
Spirituskørsel kan knytte sig til et mismatch mellem, hvad du tror, du mener og dine ubevidste holdninger, mener forsker fra DTU
Department of Management Engineering, Technology and Innovation Management

**Ville du købe en bil, der var programmeret til at slå føreren ihjel?**
Martin Mose Bentzen
30/10/2016
Department of Management Engineering, Technology and Innovation Management

**PhD, Sara Shafiee, DTU Management Engineering and Haldor Topsøe: PhD, Sara Shafiee, DTU Management Engineering and Haldor Topsøe**
Sara Shafiee
28/10/2016

**Description**
This film is produced for DTU’s celebration of the new PhD graduates 2016, and is about Sara Shafiee, how is doing an industrial PhD about: “Conceptual Modelling for Product Configuration Systems” in collaboration between DTU Management Engineering and Haldor Topsøe.
Farligt, mindre hensynsfuldt og fyldt med egoister: Danskernes dom over trafikken er hård: Trafikken er blevet farligere de senere år, mener danskerne ifølge en undersøgelse, Kantar Gallup har lavet for Gjensidige Forsikring. Men billedet stemmer ikke overens med statistikkerne, påpeger forskere.

Laila Marianne Martinussen
27/10/2016
Department of Management Engineering, Technology and Innovation Management

Selvkørende biler og etik: Ville du købe en bil, der var programmeret til at slå føreren ihjel?
Martin Mose Bentzen
24/10/2016
Department of Management Engineering, Technology and Innovation Management

Cross-border auctions for solar PV - the first of a kind
Lena Kitzing & Paul Wendring
13/10/2016 → 13/10/2016

Description
http://concito.dk/blog/danmark-tyskland-front-foerste-internationale-solcelleudbud

Subject
Renewable energy auctions in Denmark and Germany
Department of Management Engineering, Systems Analysis, Energy Economics and Regulation, CONCITO

Media contributions (2)

Danmark og Tyskland i front med første internationale solcelleudbud
13/10/2016
CONCITO-bloggen (National), Denmark, Web
CONCITO
https://concito.dk/blog/danmark-tyskland-front-foerste-internationale-solcelleudbud
Blog article - guest blog for CONCITO
https://concito.dk/blog/danmark-tyskland-front-foerste-internationale-solcelleudbud
CONCITO

Cross-border auctions for solar PV - the first of a kind
13/10/2016
Blog article on project homepage (International), Denmark, Web
AURES project
Danish-German cross-border auction on solar PV could serve as blue-print for future auctions
Lena Kitzing & Paul Wendring
Department of Management Engineering, Systems Analysis, Energy Economics and Regulation
Press / Media

Detektor
Mogens Fosgerau
15/09/2016
Department of Management Engineering, Transport policy and behaviour

Media contribution (1)

Detektor
15/09/2016
Television
https://www.dr.dk/tv/se/detektor-tv/detektor-2016-09-15
Mogens Fosgerau
Transport policy and behaviour, Department of Management Engineering

Relations
Projects:
URBAN
Press / Media

21 Søndag
Martin Mose Bentzen
21/08/2016

Description
Interviewed about ethical dilemmas of autonomous vehicles
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

21 Søndag
21/08/2016
Danmarks Radio, Television
Martin Mose Bentzen
Department of Management Engineering, Technology and Innovation Management
Press / Media

Interview with the University of Eastern Finland: Työ tekijää myöten
Kasper Edwards
16/08/2016
**Description**
Interview with the University of Eastern Finland

**Subject**
Ergonomics
Department of Management Engineering, Management Science, Implementation and Performance Management

**Media contribution (1)**

*Interview with the University of Eastern Finland: Työ tekijää myöten*
16/08/2016
Web
University of Eastern Finland
30min
http://www.uef.fi/en/-/tyo-tekijaa-myoten
Kasper Edwards
Department of Management Engineering, Management Science, Implementation and Performance Management
Press / Media

**Min Vidensby**
Susanne Balslev Nielsen
21/06/2016

**Subject**
Lyngby Vidensby
Department of Management Engineering, Systems Analysis, DTU Climate Centre, Centre for Facilities Management

**Media contribution (1)**

*Min Vidensby*
21/06/2016
Det Grønne Område, Print
http://vidensby.dk/medlemskab-af-vidensbyen/#susanne-balslev-nielsen-dtu-management
Susanne Balslev Nielsen
Department of Management Engineering, Centre for Facilities Management, Systems Analysis, DTU Climate Centre
Press / Media

**Public Service Obligation - Financing renewable energy support**
Lena Kitzing
13/05/2016

**Description**
Interview related to PSO reform

**Subject**
DR2 Dagen, National Television, 13 May 2016
Department of Management Engineering, Systems Analysis

**Media contribution (1)**

*PSO reform in Denmark*
13/05/2016
DR2 Dagen (National), Denmark, Television
Danmarks Radio
5 minutes interview
Lena Kitzing
Press / Media

**Stress er ikke en selvfølge**
Christine Ipsen
01/05/2016
Department of Management Engineering, Management Science, Implementation and Performance Management

**Media contribution (1)**
Stress er ikke en selvfølge
01/05/2016
Firmaidræt, Print
Dansk Firmaidræts Forbund
http://www.swiflet.com/jto/firmaidraet/49/32
Christine Ipsen
Department of Management Engineering, Management Science, Implementation and Performance Management
Press / Media

Hvor meget ansvar er vi klar til at give den selvkørende bil?
Martin Mose Bentzen
25/04/2016
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

Hvor meget ansvar er vi klar til at give den selvkørende bil?
25/04/2016
Information, Print
Martin Mose Bentzen
Department of Management Engineering, Technology and Innovation Management
Press / Media

DHI's new integrated technology provides improved rainfall modelling
Morten Andreas Dahl Larsen
24/03/2016
Department of Management Engineering, Systems Analysis, DTU Climate Centre

Media contribution (1)

DHI's new integrated technology provides improved rainfall modelling
24/03/2016
Print
Morten Andreas Dahl Larsen
Department of Management Engineering, Systems Analysis, DTU Climate Centre
Press / Media

Nyudviklet nedbørsmodel i NATURE's Scientific Reports
Morten Andreas Dahl Larsen
15/03/2016
Department of Management Engineering, Systems Analysis, DTU Climate Centre

Media contribution (1)

Nyudviklet nedbørsmodel i NATURE's Scientific Reports
15/03/2016
DTU, Print
http://www.man.dtu.dk/Nyheder/Nyhed?id=3D87444C-C4FD-4715-928C-22BD4126F408
Morten Andreas Dahl Larsen
Department of Management Engineering, Systems Analysis, DTU Climate Centre
Press / Media

Vi kan blive langt bedre til at forudsige oversvømmelser og tørke
Morten Andreas Dahl Larsen
11/03/2016
Department of Management Engineering, Systems Analysis, DTU Climate Centre

Media contribution (1)

Vi kan blive langt bedre til at forudsige oversvømmelser og tørke
11/03/2016
Videnskab.dk, Print
Morten Andreas Dahl Larsen
Department of Management Engineering, Systems Analysis, DTU Climate Centre
Press / Media

Fremtidens klima: Mere vand i nedbørsmodellerne
Morten Andreas Dahl Larsen
10/03/2016
Department of Management Engineering, Systems Analysis, DTU Climate Centre

Media contribution (1)

Fremtidens klima: Mere vand i nedbørsmodellerne
10/03/2016
DMI.dk, Print
http://www.dmi.dk/nyheder/arkiv/nyheder-2016/marts/fremtidens-klima-mere-vand-i-nedboersmodellerne/
Morten Andreas Dahl Larsen
Department of Management Engineering, Systems Analysis, DTU Climate Centre
Press / Media

Udsigt til bedre prognoser for oversvømmelser og tørke
Morten Andreas Dahl Larsen
10/03/2016
Department of Management Engineering, Systems Analysis, DTU Climate Centre

Media contribution (1)

Udsigt til bedre prognoser for oversvømmelser og tørke
10/03/2016
GEUS.dk, Print
http://www.geus.dk/cgi-bin/webbasen_nyt.pl?id=1457627223|cgifunction=form
Morten Andreas Dahl Larsen
Department of Management Engineering, Systems Analysis, DTU Climate Centre
Press / Media

Hvad gør vi, når maskiner har en højere moral end mennesker?
Martin Mose Bentzen
18/02/2016
Subject
Ethical robots
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

Hvad gør vi, når maskiner har en højere moral end mennesker?
18/02/2016
Føljeton, Web
Martin Mose Bentzen
Department of Management Engineering, Technology and Innovation Management
Press / Media

Du lægger ud som Luke Skywalker – hvordan undgår du at ende som Darth Vader?
Martin Mose Bentzen
01/01/2016
Subject
Engineering Ethics
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

Du lægger ud som Luke Skywalker – hvordan undgår du at ende som Darth Vader?
01/01/2016
Ingeniøren, Print
Martin Mose Bentzen
Department of Management Engineering, Technology and Innovation Management
Press / Media

Adfærdsovelser kan måske forhindre spritkørsel
Laila Marianne Martinussen
08/12/2015

Subject
Forskning på holdninger til spirituskørsel
Department of Management Engineering, Transport policy and behaviour, Technology and Innovation Management

Media contribution (1)

Adfærdsovelser kan måske forhindre spritkørsel
08/12/2015
DTU Avisen, Print
DTU
http://www.dtu.dk/Nyheder/2015/12/Adfaerdsoevelser-kan-maaske-forhindre-spritkoersel?id=ac2463a0-6aba-4efb-a184-a3637d6d6884
Laila Marianne Martinussen
Transport policy and behaviour, Department of Management Engineering, Technology and Innovation Management
Press / Media

Ekspert: Danskerne har det med kød, som amerikanerne har det med skydevåben: Kødet er danskernes hellige ko, lyder det fra forsker i bæredygtighed
Henrik Saxe
07/12/2015

Subject
Kødforbrug og klima
Department of Management Engineering, Quantitative Sustainability Assessment

Media contribution (1)

Ekspert: Danskerne har det med kød, som amerikanerne har det med skydevåben: Kødet er danskernes hellige ko, lyder det fra forsker i bæredygtighed
07/12/2015
DR Nyheder, Web
Maya Nissen
4 sider
Henrik Saxe
Department of Management Engineering, Quantitative Sustainability Assessment

Ekspert: Danskerne har det med kød, som amerikanerne har det med skydevåben: Kødet er danskernes hellige ko, lyder det fra forsker i bæredygtighed
07/12/2015
DR Nyheder, Web
Maya Nissen
4 sider
Henrik Saxe
Department of Management Engineering, Quantitative Sustainability Assessment
Danskerne spiser mindre kød: hvad hvis udviklingslandene spiste kød som i Danmark
Henrik Saxe
07/12/2015

Subject
kost, kød, klima, miljø
Department of Management Engineering, Quantitative Sustainability Assessment

Media contribution (1)

Danskerne spiser mindre kød: hvad hvis udviklingslandene spiste kød som i Danmark
07/12/2015
DR2, P1, P3 morgen, Television
Lasse Berg Sørensen
6 min
https://www.dr.dk/tv/se/dr2-morgen/dr2-morgen-2015-12-07#!/
Henrik Saxe
Department of Management Engineering, Quantitative Sustainability Assessment

Status på ESCO-projekter i Danmark?
Susanne Balslev Nielsen
27/11/2015

Description
Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis, Centre for Facilities Management

Status på ESCO-projekter i Danmark?
27/11/2015
Bygge- & Anlægsavisen, Print
November 2015
http://bygge-anlaegsavisen.dk/
Susanne Balslev Nielsen
Department of Management Engineering, Centre for Facilities Management, Systems Analysis, DTU Climate Centre, Energy Systems Analysis

Smartphones and watches under the researcher's microscope
Julia Rosemary Thorpe
20/11/2015

Department of Management Engineering, Production and Service Management, Engineering Systems Group, Copenhagen Center for Health Technology

Smartphones and watches under the researcher's microscope
20/11/2015
Magasinet Pleje, Print
http://www.magasinetpleje.dk/article/view/229623/smarte_ure_under_forskernes_lup#.VnpcAv6FNes
Smarte telefoner og ure under forskernes lup, af Lotte Brochmann
Julia Rosemary Thorpe
Copenhagen Center for Health Technology, Department of Management Engineering, Production and Service Management, Engineering Systems Group

Press / Media
Distanceledelse – en udfordring over tid, sted og kultur
Christine Ipsen
17/11/2015

Description

Department of Management Engineering, Production and Service Management, Management Science, Implementation and Performance Management

Media contribution (1)

Distanceledelse – en udfordring over tid, sted og kultur
17/11/2015
Effektivitet, Print
effektivitet.dk
http://www.scm.dk/distanceledelse-%E2%80%93-en-udfordring-over-tid-sted-og-kultur
Christine Ipsen
Department of Management Engineering, Production and Service Management, Management Science, Implementation and Performance Management

24syv Morgen
Martin Mose Bentzen
03/11/2015

Subject
Ethical dilemmas for social robots
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

24syv Morgen
03/11/2015
radio24syv, Radio
Martin Mose Bentzen
Department of Management Engineering, Technology and Innovation Management

Skemalagt undervisning skal gøre Danmark verdensmester i bæredygtigt byggeri
Morten Birkved
30/09/2015

Subject
Undervisning i bæredygtighedskvantificering
Department of Management Engineering, Quantitative Sustainability Assessment

Media contribution (1)

Skemalagt undervisning skal gøre Danmark verdensmester i bæredygtigt byggeri
30/09/2015
Ritzau, Print
Morten Birkved
Department of Management Engineering, Quantitative Sustainability Assessment
Forsker: Vindmøllekonflikter skyldes misundelse
Kristian Borch
24/07/2015

Subject
Vindmølle kontroverser
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

Forsker: Vindmøllekonflikter skyldes misundelse
24/07/2015
Danmarks Radio P4 Syd, Radio
Andreas Foldberg
4 min
Kristian Borch
Department of Management Engineering, Technology and Innovation Management

Relations
Projects:
Controversies on wind power Wind2050
Press / Media

Interview af Fagbladet 3F
Kasper Edwards
29/06/2015
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Media contribution (1)

Interview af Fagbladet 3F
29/06/2015
Fagbladet 3F, Web
5 min
Kasper Edwards
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Press / Media

Video af "Thue og monopolet" i Folkets Hus på Folkemødet 2015
Kasper Edwards
13/06/2015
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Media contribution (1)

Video af "Thue og monopolet" i Folkets Hus på Folkemødet 2015
13/06/2015
Web
https://www.youtube.com/watch?v=S9vwabpl554.
Kasper Edwards
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Press / Media

Folkemøde: Slå ring om Bo og sig: "Det accepterer vi ikkel"
Kasper Edwards
13/06/2015
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Media contribution (1)
Folkemøde: Slå ring om Bo og sig: "Det accepterer vi ikke!"
13/06/2015
Offentlig Ledelse, Web
http://offentligledelse.dk/folkemoede-slaa-ring-om-bo-og-sig-det-accepterer-vi-ikke/
Kasper Edwards
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Press / Media

Gode tips til bedre ledelse på folkemødet
Kasper Edwards
13/06/2015
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Media contribution (1)

Gode tips til bedre ledelse på folkemødet
13/06/2015
FTF Aktuelt, Web
FTF
Kasper Edwards
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Press / Media

Nyt robothotel udfordrer vores menneskelighed
Martin Mose Bentzen
27/05/2015
Department of Management Engineering, Technology and Innovation Management, Risk Research Group
Media contribution (1)

Nyt robothotel udfordrer vores menneskelighed
27/05/2015
Kristeligt Dagblad, Print
http://www.etik.dk/danmark/nyt-robothotel-udfordrer-vores-menneskelighed
Martin Mose Bentzen
Department of Management Engineering, Risk Research Group, Technology and Innovation Management
Press / Media

Simulatorbransjen satsar på vind
Kalle A. Piirainen
27/05/2015
Subject
Simulator training in offshore wind services
Department of Management Engineering, Technology and Innovation Management
Media contribution (1)

Simulatorbransjen satsar på vind
27/05/2015
Nett.no, Web
Kalle A. Piirainen
Department of Management Engineering, Technology and Innovation Management

Relations
Projects:
European Clusters for Offshore Wind Servicing
Press / Media
Ja tak til vindenergi - bare ikke lige her
Kristian Borch
19/05/2015

Subject
Konflikter om kystnære vindmøller ved Kalundborg
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

Ja tak til vindenergi - bare ikke lige her
19/05/2015
Danmarks Radio, Radio
Lis Vibeke Læsøe Olsen
4 min
http://www.dr.dk/nyheder/regionale/sjaelland/ja-tak-til-vindenergi-bare-ikke-lige-her
Kristian Borch
Department of Management Engineering, Technology and Innovation Management

Relations
Projects:
Controversies on wind power Wind2050
Press / Media

Når kompleksitet er et grundvilkår for ledelse
Kasper Edwards
01/05/2015
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Media contribution (1)

Når kompleksitet er et grundvilkår for ledelse
01/05/2015
Ledelse i dag, Web
Lederne
https://www.lederne.dk/ledelseidag/Artikler/Seogeftermndogaar/2015/Nr.+5+maj/naarkompleksiteteretgrundvilkaarforlede
se.htm
Kasper Edwards
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Press / Media

Social kapital: samarbejde til glæde for alle
Kasper Edwards
13/04/2015
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Media contribution (1)

Social kapital: samarbejde til glæde for alle
13/04/2015
Grafisk BAR, Print
http://www.swiflet.com/grab/gb/35/13/
Kasper Edwards
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Press / Media

Nyt værktøj skal lukke huller i klimamodeller
Morten Andreas Dahl Larsen
17/02/2015
Department of Management Engineering, Systems Analysis, DTU Climate Centre
**Nyt værktøj skal lukke huller i klimamodeller**

17/02/2015

GTS-net, Print


Morten Andreas Dahl Larsen
Department of Management Engineering, Systems Analysis, DTU Climate Centre

**Kobling af grundvandsmodellen med den regionale klimamodel**

12/02/2015

Department of Management Engineering, Systems Analysis, DTU Climate Centre

**Magasinet Penge: Trafikulykker koster dyrt**

Laila Marianne Martinussen
21/01/2015

Description
Interviewed about the psychological reasons behind reckless driving.
Department of Management Engineering, Transport policy and behaviour, Technology and Innovation Management

**Penge: Trafikulykker koster dyrt**

Laila Marianne Martinussen
21/01/2015

Department of Transport, Transport policy and behaviour
Vindmølle-forsker: Genialt at Vattenfall køber landejendomme
Kristian Borch
15/01/2015

Description
Vindmølle konflikt
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

Vindmølle-forsker: Genialt at Vattenfall køber landejendomme
15/01/2015
Danmarks Radio, Web
http://www.dr.dk/nyheder/viden/miljoe/vindmoelle-forsker-genialt-vattenfall-koeber-landejendomme
Kristian Borch
Department of Management Engineering, Technology and Innovation Management

Relations
Projects:
Controversies on wind power Wind2050
Press / Media

Vindmølle-modvind skal vendes til medvind
Kristian Borch
15/01/2015
Department of Management Engineering, Technology and Innovation Management

Media contribution (1)

Vindmølle-modvind skal vendes til medvind
15/01/2015
Danmarks Radio Viden, Web
Hanne Kokkegård
http://www.dr.dk/nyheder/viden/miljoe/vindmoelle-modvind-skal-vendes-til-medvind
Kristian Borch
Department of Management Engineering, Technology and Innovation Management

Relations
Projects:
Controversies on wind power Wind2050
Press / Media

Interview i Ledelse i dag: Når kopmopleksitet er et grundvilkår for ledelse
Kasper Edwards
01/01/2015
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Media contribution (1)

Interview i Ledelse i dag: Når kopmopleksitet er et grundvilkår for ledelse
01/01/2015
Ledelse I Dag, Print
Lederne
Kasper Edwards
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Relations
Projects:
Sammenhænge mellem produktivitet og psykisk arbejdsmiljø
Press / Media
Open Day at DTU 6 November: Great interest in Strategisk Analyse og Systemdesign
Zaza Nadja Lee Herbert-Hansen
11/11/2014
Department of Management Engineering, Management Science

Media contribution (1)

Open Day at DTU 6 November: Great interest in Strategisk Analyse og Systemdesign
11/11/2014
DTU MAN news, Web
Zaza Nadja Lee Herbert-Hansen
Department of Management Engineering, Management Science

Blandede karakterer til miljøpolitik: Miljøpolitikken fra Dansk Byggeris hånd bliver modtaget med både ris og ros fra en række miljøeksperter
Morten Birkved
19/10/2014

Subject
Bæredygtigt byggeri
Department of Management Engineering, Quantitative Sustainability Assessment

Media contribution (1)

Blandede karakterer til miljøpolitik: Miljøpolitikken fra Dansk Byggeris hånd bliver modtaget med både ris og ros fra en række miljøeksperter
19/10/2014
Licitationen, Print
Jane Schmidt Klausen
20 min.
Morten Birkved
Department of Management Engineering, Quantitative Sustainability Assessment

Music under kørslen er en fordel for bilister
Laila Marianne Martinussen
09/10/2014

Subject
Bilkørsel og musik
Department of Transport, Transport policy and behaviour

Media contribution (1)

Music under kørslen er en fordel for bilister
09/10/2014
NetAvisen, Web
Nadia Guldbæk Welch
http://navisen.dk/blog/musik-under-korslen-gavner-erfarne-bilister/
Laila Marianne Martinussen
Department of Transport, Transport policy and behaviour

Fin grunduddannelse på trods af færre uddannelsesdage
Rikke Seim
01/10/2014

Subject
Arbejdsmiljøuddannelse
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Fin grunduddannelse på trods af færre uddannelsesdage
01/10/2014
Magasinet Arbejdsmiljø, Print
Birgit Bruun Christensen
Rikke Seim
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Press / Media

Logistikken bliver grønnere
Allan Olsen
25/09/2014

Subject
Grøn Logistik
Department of Transport, Transport optimisation and technique

Media contribution (1)

Logistikken bliver grønnere
25/09/2014
Jyllandsposten, Print
Lasse Skytt
Allan Olsen
Department of Transport, Transport optimisation and technique
Press / Media

Radio24syv (AK 24syv): Debate about ethical robots
Martin Mose Bentzen
17/09/2014
Department of Management Engineering, Production and Service Management, Risk Research Group

Media contribution (1)

Radio24syv (AK 24syv): Debate about ethical robots
17/09/2014
Radio
Martin Mose Bentzen
Department of Management Engineering, Production and Service Management, Risk Research Group
Press / Media

DR1 tv-avisen kl 22: Interview om sikkerhed
Kirsten Jørgensen
09/09/2014

Subject
Sikkerhed
Department of Management Engineering, Production and Service Management, Risk Research Group

Media contribution (1)

DR1 tv-avisen kl 22: Interview om sikkerhed
09/09/2014
DR 1, Television
15 sekunder
Kirsten Jørgensen
Department of Management Engineering, Production and Service Management, Risk Research Group
Press / Media
**Overvågning kan medføre mistillid - men også bruges konstruktivt**
Kasper Edwards  
01/09/2014

**Subject**
Nr. 9-2014  
Department of Management Engineering, Production and Service Management

**Media contribution (1)**

**Overvågning kan medføre mistillid - men også bruges konstruktivt**
01/09/2014  
Magasinet Arbejdsmiljø, Print  
Andreas Antoni Lund  
Kasper Edwards  
Department of Management Engineering, Production and Service Management  
Press / Media

**Vi skal alle "performe"**
Kasper Edwards  
01/08/2014  
Department of Management Engineering, Production and Service Management

**Media contribution (1)**

**Vi skal alle "performe"**
01/08/2014  
Finans, Print  
Carsten Rasmussen  
Kasper Edwards  
Department of Management Engineering, Production and Service Management

**Relations**
Research outputs:
Ledelse med social kapital giver høj produktivitet
Projects:
Sammenhænge mellem produktivitet og psykisk arbejdsmiljø
Press / Media

**Forandringsbølge smadrer trivslen**
Kasper Edwards  
14/06/2014

**Subject**
Når virksomhederne vil forbedre produktivitet og konkurrenceevne, skaber de frygt og dårlig trivsel, viser ny undersøgelse. Forandringer gribes forkert an, siger forsker og faglige organisationer.  
Department of Management Engineering, Production and Service Management

**Media contribution (1)**

**Forandringsbølge smadrer trivslen**
14/06/2014  
UGEBREVET A4, Print  
Michael Bræmer  
http://www.ugebreveta4.dk/forandringsboelge-smadrer-trivslen_19698.aspx  
Kasper Edwards  
Department of Management Engineering, Production and Service Management  
Press / Media

**Danskerne mest parate til at de andre forandrer sig**
Kasper Edwards  
14/06/2014
Danskerne mest parate til at de andre forandrer sig
14/06/2014
UGEREVET A4, Print
Michael Bræmer
http://www.ugebreveta4.dk/danskerne-mest-parate-til-at-de-andre-forandrer-sig_19704.aspx
Kasper Edwards
Department of Management Engineering, Production and Service Management
Press / Media

Ekspert: Overvågning af ansatte kræver klare regler
Kasper Edwards
14/06/2014
Department of Management Engineering, Production and Service Management

Interview i programmet Gandhi
Martin Mose Bentzen
04/06/2014
Subject
Robotter og etik
Department of Management Engineering, Production and Service Management

Årlig drøftelse: Virksomhederne skal selv finde vejen: Artikel i Magasinet Arbejdsmiljø
Rikke Seim
01/04/2014
Subject
Arbejdsmiljøarbejde, Årlig Dørfeltelse
Department of Management Engineering, Production and Service Management, Implementation and Performance Management

Årlig drøftelse: Virksomhederne skal selv finde vejen: Artikel i Magasinet Arbejdsmiljø
01/04/2014
Magasinet Arbejdsmiljø, Print
Birgit Bruun Christensen
http://www.arbejdsmiljoviden.dk/Magasin/April-2014/Aarlig-arbejdsmiljoedroeftelse/Virksomheder-skal-selv-finde-vejen
Rikke Seim
Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Unge kører ulovligt ræs på offentlige veje
Laila Marianne Martinussen
25/03/2014

Subject
Trafiksikkerhed
Department of Transport, Transport policy and behaviour

Media contribution (1)

Unge kører ulovligt ræs på offentlige veje
25/03/2014
NetAvisen, Print
Karoline Graulund Nøhr
http://navisen.dk/blog/unge-korer-ulovligt-raes-pa-offentlige-veje/
Laila Marianne Martinussen
Department of Transport, Transport policy and behaviour

Facility Management - Service Elevators: Big outsourcing firms find that escaping the crowd is not so easy
Per Anker Jensen
15/03/2014

Description
The article concerns the challenges for large multinational service providers on the Facility Management market.

The article finishes with the following quote: Per Anker Jensen of the Technical University of Denmark says that, as in other crowded industries, the survivors in the outsourcing game will have to do better than just offer the keenest prices: they will need to be innovators, constantly coming up with useful new services that their clients never realised they needed.

Subject
Business section
Department of Management Engineering, Production and Service Management

Media contribution (1)

Facility Management - Service Elevators: Big outsourcing firms find that escaping the crowd is not so easy
15/03/2014
The Economist, Print
Merril Stevenson
1 hour phone interview
Per Anker Jensen
Department of Management Engineering, Production and Service Management

Er det etisk forsvarligt at lave robotter, der er ligesom mennesker?
Martin Mose Bentzen
14/02/2014

Subject
Etik og sociale robotter
Department of Management Engineering, Production and Service Management

Media contribution (1)

Er det etisk forsvarligt at lave robotter, der er ligesom mennesker?
14/02/2014
Kristeligt dagblad, Print
http://www.etik.dk/fremtidens-st%C3%B8rste-etiske-udfordringer/er-det-etisk-forsvarligt-lave-robotterder-er-ligesom
Link to the article
Martin Mose Bentzen
Media interview on complex engineering systems for ChileGlobal
Pedro Parraguez Ruiz
01/01/2014

Subject
Collaboration, Innovation and complex engineering systems (in Spanish)
Department of Management Engineering, Production and Service Management, Engineering Systems Group

Media contribution (1)

Media interview on complex engineering systems for ChileGlobal
01/01/2014
ChileGlobal, Television
30 minutes
https://www.youtube.com/watch?v=YeB9pUfxAmE
Full interview
Pedro Parraguez Ruiz
Engineering Systems Group, Department of Management Engineering, Production and Service Management

Arbejdsglæde og værdiskabelse - relationel koordinering og social kapital
Kasper Edwards
01/01/2014
Department of Management Engineering, Production and Service Management

Media contribution (1)

Arbejdsglæde og værdiskabelse - relationel koordinering og social kapital
01/01/2014
RELATIONEL PRAKSIS, Print
Hanne V. Moltke og Heidi Graff
http://issuu.com/forlagetmindspace/docs/relationel_praksis_vol_5_nr_1_sats
Kasper Edwards
Department of Management Engineering, Production and Service Management

Klimaforhandlinger
Kirsten Halsnæs
25/11/2013

Subject
COP 19 møde i Polen
Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis

Media contribution (1)

Klimaforhandlinger
25/11/2013
Radio 24 syv, Print
35 min
Kirsten Halsnæs
Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis

Luis Rafael Boscán Flores
24/10/2013

Description
The way in which securities are traded is very different from the idealized picture of a frictionless and self-equilibrating market offered by the typical finance textbook. Market Liquidity aims to confront many puzzling phenomena in securities markets and uses the analytical tools and empirical methods of market microstructure to understand them. These include
issues such as why liquidity changes over time, why large trades move prices up or down, and why these price changes are subsequently reversed, and why some traders willingly disclose their intended trades while others hide them.

Reviewed by Luis Boscán.

Subject
Finance, Economics
Department of Management Engineering, Systems Analysis

Media contribution (1)

24/10/2013
LSE Review of Books (International), United Kingdom, Web
The London School of Economics and Political Science
The way in which securities are traded is very different from the idealized picture of a frictionless and self-equilibrating market offered by the typical finance textbook. Market Liquidity aims to confront many puzzling phenomena in securities markets and uses the analytical tools and empirical methods of market microstructure to understand them. These include issues such as why liquidity changes over time, why large trades move prices up or down, and why these price changes are subsequently reversed, and why some traders willingly disclose their intended trades while others hide them.
Reviewed by Luis Boscán.
Luis Rafael Boscán Flores
Press / Media

Her er opskriften på trivsel og produktivitet
Christine Ipsen
18/10/2013
Department of Management Engineering, Production and Service Management

Media contribution (1)

Her er opskriften på trivsel og produktivitet
18/10/2013
Ingeniøren, Web
Christine Ipsen
Department of Management Engineering, Production and Service Management
Press / Media

Her peger medarbejderne det ud der ikke duer
Christine Ipsen
18/10/2013
Department of Management Engineering, Production and Service Management

Media contribution (1)

Her peger medarbejderne det ud der ikke duer
18/10/2013
Ingeniøren, Web
Christine Ipsen
Department of Management Engineering, Production and Service Management
Press / Media

Her peger medarbejderne det ud der ikke duer
Christine Ipsen
18/10/2013
Department of Management Engineering, Production and Service Management

Media contribution (1)

Her peger medarbejderne det ud der ikke duer
18/10/2013
Ingeniøren, Print
Christine Ipsen
Department of Management Engineering, Production and Service Management
Så godt som penge i banken
Kasper Edwards
01/10/2013
Department of Management Engineering, Production and Service Management

Media contribution (1)

Så godt som penge i banken
01/10/2013
Kreds Nordea, Print
Carsten Jørgensen
Kasper Edwards
Department of Management Engineering, Production and Service Management

Relations
Projects:
Sammenhænge mellem produktivitet og psykisk arbejdsmiljø

Oversvømmelser
Kirsten Halsnæs
25/09/2013

Subject
Oversvømmelser
Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis

Media contribution (1)

Oversvømmelser
25/09/2013
Metro express, Print
Kirsten Halsnæs
Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis

Klimaekstremer, IPCC
Kirsten Halsnæs
23/09/2013

Subject
Klima og risici
Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis

Media contribution (1)

Klimaekstremer, IPCC
23/09/2013
Information, Print
Jørgen Steen Nielsen
Kirsten Halsnæs
Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis

Dårlig kultur æder Lean-værktøjer til morgenmad
David Hansen
19/09/2013
Department of Management Engineering, Production and Service Management

Media contribution (1)
Dårlig kultur æder Lean-værktøjer til morgenmad  
19/09/2013  
Metal-Supply.dk, Web  
David Wedege  
http://www.metal-supply.dk/article/view/109627/darlig_kultur_aeder_leanvaerktojer_til_morgenmad?ref=newsletter#.UubrInmiZcw  
View article  
David Hansen  
Department of Management Engineering, Production and Service Management  
Press / Media  

Dårlig kultur æder Lean-værktøjer til morgenmad: Interview  
David Hansen  
19/09/2013  

Subject  
Lean Leadership  
Department of Management Engineering, Production and Service Management  

Media contribution (1)  

Phil & søn tabte millioner på polsk strategi  
Kirsten Jørgensen  
10/09/2013  

Subject  
Dårlig ledelse af byggeprojekt  
Department of Management Engineering, Production and Service Management  

Media contribution (1)  

Profitten Stiger, når folk har det godt  
Kasper Edwards  
01/09/2013  
Department of Management Engineering, Production and Service Management  

Media contribution (1)  

Link to FINANS.  
Kasper Edwards
South Africa's CO2 tax proposal faces delay
Glenn Stuart Hodes
22/08/2013
Department of Management Engineering, UNEP Risø Centre

Media contribution (1)

South Africa's CO2 tax proposal faces delay
22/08/2013
Argus European Emissions Markets, Print
Argus Media
Glenn Stuart Hodes
Department of Management Engineering, UNEP Risø Centre
Press / Media

Book Review: Inventing the Market: Smith, Hegel & Political Theory by Liza Herzog
Luis Rafael Boscán Flores
22/08/2013

Description
Inventing the Market: Smith, Hegel, and Political Theory analyses the constructions of the market in the thought of Adam Smith and Georg Wilhelm Friedrich Hegel and discusses their relevance for contemporary political philosophy. Combining the history of ideas with systematic analysis, it contrasts Smith’s view of the market as a benevolently designed ‘contrivance of nature’ with Hegel’s view of the market as a relic of the state of nature.’ As the various prizes won by Herzog for this work confirm, this is an excellent scholarly effort, concludes Luis Boscán.

Subject
Philosophy, Political Theory, Economics
Department of Management Engineering, Systems Analysis

Media contribution (1)

Book Review: Inventing the Market: Smith, Hegel & Political Theory by Liza Herzog
22/08/2013
LSE Review of Books (International), United Kingdom, Web
The London School of Economics and Political Science
Inventing the Market: Smith, Hegel, and Political Theory analyses the constructions of the market in the thought of Adam Smith and Georg Wilhelm Friedrich Hegel and discusses their relevance for contemporary political philosophy. Combining the history of ideas with systematic analysis, it contrasts Smith’s view of the market as a benevolently designed ‘contrivance of nature’ with Hegel’s view of the market as a relic of the state of nature.’ As the various prizes won by Herzog for this work confirm, this is an excellent scholarly effort, concludes Luis Boscán.
Luis Rafael Boscán Flores
Press / Media

Carbon Trading - Answer to South Africa’s Energy Crisis?
Glenn Stuart Hodes
18/07/2013

Description
Individual, face-to-face interview as part of web-based database for energati. Discussion on UN SE4ALL initiative, the challenge of energy access in Africa and the linkages with global carbon trading markets, future directions for climate finance to support renewable energy in Africa.

Subject
Energy access agenda in Africa and linkage with global carbon trading markets, future directions for climate finance to support renewable energy in Africa.
Carbon Trading - Answer to South Africa's Energy Crisis?
18/07/2013
energati analysis, Web
Adam Mali
23 minute video
Glenn Stuart Hodes
Department of Management Engineering, UNEP Risø Centre
Press / Media

Book Review: America's Blind Spot: Chávez, Oil and US Security by Andrés Cala and Michael Economides
Luis Rafael Boscán Flores
22/05/2013

Description
Latin America holds some of the world’s biggest oil reserves, but unstable political events in the region are hindering its potential, especially in Venezuela. Global U.S. security would benefit from a revamping of outdated policies towards Latin America, argue Andrés Cala and Michael Economides. This is a blind spot in American politics, one that threatens U.S. geopolitical and economic interests. In this book, the authors aim to offer a thorough analysis of key geopolitical and economic threats to the U.S., highlighting the need for a new Latin American policy doctrine based on military and strategic priorities. Reviewed by Luis Boscán.

Subject
Energy Policy, Politics
Department of Management Engineering, Systems Analysis

Book Review: America's Blind Spot: Chávez, Oil and US Security by Andrés Cala and Michael Economides
22/05/2013
LSE Review of Books (International), United Kingdom, Web
London School of Economics and Political Science
Luis Rafael Boscán Flores
Press / Media

Ingeniøren: DTU tester avanceret cockpit-design i Tivoli-rutsjebane
Alexandre Alapetite
02/05/2013
Department of Management Engineering, Production and Service Management

Ingeniøren: DTU tester avanceret cockpit-design i Tivoli-rutsjebane
02/05/2013
Ingeniøren, Print
http://ing.dk/artikel/dtu-tester-avanceret-cockpit-design-i-tivoli-rutsjebane-158441
DTU tester avanceret cockpit-design i Tivoli-rutsjebane
Alexandre Alapetite
Department of Management Engineering, Production and Service Management

Relations
Projects:
One Display for a Cockpit Interactive Solution
Press / Media

Dynamo: Fremtidens cockpit
Alexandre Alapetite
01/05/2013
Department of Management Engineering, Production and Service Management
Media contribution (1)

**Dynamo: Fremtidens cockpit**

01/05/2013
Dynamo, Print
DTU

http://www.dtu.dk/Nyheder/Dynamo/Nyhed?id=5019D876-B83A-44F8-8B5F-31DD5DB5B287

The cockpit of the future - DTU Dynamo
Alexandre Alapetite
Department of Management Engineering, Production and Service Management

**Relations**
Research outputs:
Direct tactile manipulation of the flight plan in a modern aircraft cockpit
A Deported View Concept for Touch Interaction
ODICIS (One Display for a Cockpit Interactive Solution) - Final public progress report

**Projects:**
One Display for a Cockpit Interactive Solution

Press / Media

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**Dynamo: Mobilen er genvej til at undgå fejl**

Alexandre Alapetite
01/05/2013
Department of Management Engineering, Production and Service Management

**Media contribution (1)**

**Dynamo: Mobilen er genvej til at undgå fejl**

01/05/2013
Dynamo, Print
DTU
Alexandre Alapetite
Department of Management Engineering, Production and Service Management

**Relations**
Research outputs:
Using Explorative Simulation to Drive User-Centered Design and IT-Development in Healthcare

**Projects:**
Healthcare Innovation Lab

Press / Media

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**Der behøver ikke være så meget spild i Lean**

David Hansen
10/04/2013

**Subject**
Lean ledelse
Department of Management Engineering, Production and Service Management

**Media contribution (1)**

**Der behøver ikke være så meget spild i Lean**

10/04/2013
Ledelse i Dag, Web
Anders Grove
David Hansen
Department of Management Engineering, Production and Service Management

Press / Media

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**Usexede styrt: så meget skvatter vi for**

Kirsten Jørgensen
26/03/2013
Department of Management Engineering, Production and Service Management
Usexede styrt: så meget skvatter vi for

26/03/2013
Avisen.dk, Web
Eline Svendsen
http://www.avisen.dk/usexede-styrt-vi-skvatter-for-millioner_206826.aspx
Kirsten Jørgensen
Department of Management Engineering, Production and Service Management

DR2: Øjenstyring af flyvende droner
Alexandre Alapetite
24/01/2013

Description

Forskerne forestiller sig at den personlige drone kan komme til at ændre vores måde at omgås hinanden på – på samme måde som den personlige computer og mobiltelefoni har gjort det.

Department of Management Engineering, Production and Service Management

A Laboratory for Change
Anja Maier
21/01/2013
Department of Management Engineering, Production and Service Management, Engineering Systems Group

World Energy Outlook: Views on macro-trends in global energy supply and demand and relevance for South Africa
Glenn Stuart Hodes
11/12/2012

Description
Panelist with IEA Economist on Forum@8
Department of Management Engineering, UNEP Risø Centre
SA to become regional renewables leader, but Nigeria a sleeping giant
Glenn Stuart Hodes
14/09/2012

Description
Article on trends in renewable energy investment in Africa.
SA to become regional renewables leader, but Nigeria a sleeping giant
14/09/2012
Engineering News, Print
Creamer Media
Glenn Stuart Hodes
Department of Management Engineering, UNEP Risø Centre

Clean power developments in Southern Africa
Glenn Stuart Hodes
05/09/2012

Description
Interview for national morning talk show.
Department of Management Engineering, UNEP Risø Centre

Energy Trends in South Africa
Glenn Stuart Hodes
05/09/2012

Description
Interviewed for daily news on sidelines of Clean Power Africa conference and EXPO.
Department of Management Engineering, UNEP Risø Centre

Standardized Baseline for power sector in Southern Africa
Glenn Stuart Hodes
01/09/2012

Description
Interview on work on SAPP grid emission factor and CDM standardized baseline
Department of Management Engineering, UNEP Risø Centre

Standardized Baseline for power sector in Southern Africa
Glenn Stuart Hodes
01/09/2012
Carbon Trading, Print
Department of Management Engineering, UNEP Risø Centre
Angolan Energy Outlook on "The World Today" BBC: Angolan President gives major boost to energy investment
Glenn Stuart Hodes
24/08/2012
Department of Management Engineering, UNEP Risø Centre

Media contribution (1)

UNEP Unveils New Baseline for Southern Africa
Glenn Stuart Hodes
17/08/2012

Description
Interview with major trade publication.
Department of Management Engineering, UNEP Risø Centre

Media contribution (1)

The role of the banking sector in growing the green economy
Glenn Stuart Hodes
31/07/2012

Description
Interview and quotes for feature article on sustainable banking and green economy trends in Africa
Department of Management Engineering, UNEP Risø Centre

Media contribution (1)

Inadequate Ethics Training Leaves Young Scientists Unprepared for "Ethical Emergencies"
Zaza Nadja Lee Herbert-Hansen
14/07/2012

Description
An article based on a presentation on ethics in research I did at the Euroscience Open Forum (ESOF) 2012 in Dublin
Department of Management Engineering

Media contribution (1)
African facility gets €1m boost from German government
Glenn Stuart Hodes
30/06/2012

Description
Interview for article in leading trade publication.
Department of Management Engineering, UNEP Risø Centre

Media contribution (1)

Defining employees
Zaza Nadja Lee Herbert-Hansen
06/06/2012

Description
Doctoral candidates should be considered employees, not students, argues the European Council of Doctoral Candidates and Junior Researchers (Eurodoc) in Brussels. According to the council's 17 May statement, PhD candidates’ access to benefits and training is jeopardized if they are not designated as employees. In some cases, PhD trainees cannot access their institution's intranet and research databases, notes Zaza Nadja Lee Hansen, Eurodoc’s career development workgroup coordinator. Universities in some European countries consider PhD candidates neither students nor employees, Hansen says, but adds that other nations, including Germany and Austria, recognize them as university employees.
Department of Management Engineering, Production and Service Management

Media contribution (1)

Fælles Front mod ulykker
Kirsten Jørgensen
07/05/2012

Subject
Indstik produceret af Dansk Erhverv
Department of Management Engineering, Production and Service Management

Media contribution (1)
Fælles front mod ulykker
Kirsten Jørgensen
07/05/2012
Department of Management Engineering, Production and Service Management

Media contribution (1)

Fælles front mod ulykker
07/05/2012
Magasinet, Print
Dansk Erhverv
Kirsten Jørgensen
Department of Management Engineering, Production and Service Management

Relations
Projects:
Udvikling af metoder til ledelse af sikkerhed hos danske vognmænd
Press / Media

Ny håndbog i global produktudvikling
Zaza Nadja Lee Herbert-Hansen
01/05/2012
Department of Management Engineering, Management Science

Media contribution (1)

Ny håndbog i global produktudvikling
01/05/2012
Dynamo, Print
Dynamo number 29 from may 2012 online
Zaza Nadja Lee Herbert-Hansen
Department of Management Engineering, Management Science
Press / Media

WAIC Radio Show: The Dark Side of Appreciative Inquiry
David Hansen
27/04/2012

Description
Discussions about the shadow side of appreciative inquiry and whether a problem solving perspective can be useful as a supplementary lens.

Subject
Appreciative Problem Solving
Department of Management Engineering, Production and Service Management

Media contribution (1)

WAIC Radio Show: The Dark Side of Appreciative Inquiry
27/04/2012
WAIC Radio, Radio
Tjip de Jong
5 minutes
David Hansen
Department of Management Engineering, Production and Service Management
Press / Media

Mere fokus på banale ulykker: Banale ulykker udgør 98 procent af alle ulykker og koster virksomhederne dyrt
Kirsten Jørgensen
02/04/2012
Department of Management Engineering, Production and Service Management
Mere fokus på banale ulykker: Banale ulykker udgør 98 procent af alle ulykker og koster virksomhederne dyrt
02/04/2012
Margasinet om Arbejdsmiljø i den Grafiske Branche, Print
Grafisk BAR
Kirsten Jørgensen
Department of Management Engineering, Production and Service Management
Press / Media

Fælles front mod ulykker: Et forsikringsselskab, en brancheorganisation og en forsker er gået sammen om at forebygge de mange skader på ansatte og udstyr i transportbranchen
Kirsten Jørgensen
01/04/2012
Department of Management Engineering, Production and Service Management

Forebyg stress - I en fælles proces
Christine Ipsen
01/03/2012
Department of Management Engineering, Work, Technology and Organisation, Production and Service Management

Transportulykker koster dyrt
Kirsten Jørgensen
29/02/2012
Department of Management Engineering, Production and Service Management

Ny guide beskriver 'best practices' i global produktudvikling
Zaza Nadja Lee Herbert-Hansen
10/02/2012
Department of Management Engineering, Management Science
Ny guide beskriver 'best practices' i global produktudvikling
10/02/2012
DTU News, Web
Zaza Nadja Lee Herbert-Hansen
Department of Management Engineering, Management Science
Press / Media

TV2 Lorry; Lounge
Christine Ipsen
16/01/2012

Description
Presenting our new book "Forebyg stress - I en fælles proces"
Interviewed by Stine Sylversterson together with Vibeke Andersen
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

TV2 Lorry; Lounge
16/01/2012
Television
http://www.lorry.dk/arkiv/2012/01/16?video_id=63339
Christine Ipsen
Department of Management Engineering, Work, Technology and Organisation
Press / Media

De mest engagerede bukker først under for stress
Vibeke Andersen
09/01/2012
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

De mest engagerede bukker først under for stress
09/01/2012
JP Radio, Radio
http://front.xstream.dk/jpradio/flashplayer.php?id=6888
PUB-QA
Vibeke Andersen
Department of Management Engineering, Work, Technology and Organisation
Press / Media

Fødevare-SCM med nye værktøjer
Renzo Akkerman
01/01/2012
Department of Management Engineering, Production and Service Management

Media contribution (1)

Fødevare-SCM med nye værktøjer
01/01/2012
Produktion 360, Web
Renzo Akkerman
Department of Management Engineering, Production and Service Management

Relations
Research outputs:
Quality, safety and sustainability in food distribution
Advanced planning methodologies in food supply chains
Press / Media
DTU-model kan optimere planlægning og drift
Renzo Akkerman
01/01/2012
Department of Management Engineering, Production and Service Management

Media contribution (1)

DTU-model kan optimere planlægning og drift
01/01/2012
Produktion 360, Web
Renzo Akkerman
Department of Management Engineering, Production and Service Management

Relations
Research outputs:
Intermediate product selection and blending in the food processing industry
Press / Media

Informationsspecialister sætter spor i virksomhederne
Christine Ipsen
01/12/2011
Department of Management Engineering

Media contribution (1)

Informationsspecialister sætter spor i virksomhederne
01/12/2011
Print
Christine Ipsen
Department of Management Engineering
Press / Media

Denmark: Masters graduates overseas face study bill
Zaza Nadja Lee Herbert-Hansen
02/10/2011
Department of Management Engineering

Media contribution (1)

Denmark: Masters graduates overseas face study bill
02/10/2011
University World News, Web
University World News
Link to fulltext
Zaza Nadja Lee Herbert-Hansen
Department of Management Engineering
Press / Media

Kig på uligheden, når der skal betales i trafikken
Ismir Mulalic
14/09/2011

Subject
Debat
Department of Transport, Transport policy and behaviour

Media contribution (1)

Kig på uligheden, når der skal betales i trafikken
14/09/2011
Politiken, Print
Ismir Mulalic
GLOBAL: OECD maps PhD transferable skills progress
Zaza Nadja Lee Herbert-Hansen
21/08/2011
Department of Management Engineering, Production and Service Management

Media contribution (1)

GLOBAL: OECD maps PhD transferable skills progress
21/08/2011
University World News, Web
Zaza Nadja Lee Herbert-Hansen
Department of Management Engineering, Production and Service Management
Press / Media

Smiley dækker over ringe arbejdsmiljø
Kåre Hendriksen
01/07/2011
Innovation and Sustainability, Department of Civil Engineering

Media contribution (1)

Smiley dækker over ringe arbejdsmiljø
01/07/2011
Fagbladet FOA, Print
Martin Hammer
Kåre Hendriksen
Department of Civil Engineering, Innovation and Sustainability
Press / Media

Krone-smiley skjuler elendigt arbejdsmiljø
Kåre Hendriksen
29/05/2011
Innovation and Sustainability, Department of Civil Engineering

Media contribution (1)

Krone-smiley skjuler elendigt arbejdsmiljø
29/05/2011
A4 Arbejdsmiljø, Print
Michael Bræmer
Kåre Hendriksen
Innovation and Sustainability, Department of Civil Engineering
Press / Media

Arbejdsmiljøcertificering – udfordringer og muligheder
Kåre Hendriksen
01/04/2011

Subject
Arbejdsmiljøcertificering – udfordringer og muligheder
Innovation and Sustainability, Department of Civil Engineering

Media contribution (1)

Arbejdsmiljøcertificering – udfordringer og muligheder
01/04/2011
Øje på arbejdsmiljøet april 2011, Print
Marianne Schjøtt Rohweder
Kåre Hendriksen
Innovation and Sustainability, Department of Civil Engineering
Studying the Effectiveness of REDD+ Forest Allowances: Protecting forests, fighting climate change
Riyong Kim Bakkegaard
01/03/2011

Description
Description of fieldwork and research on REDD+ in Brazil

Subject
Web based interview on research on REDD+ during doctoral work
Department of Management Engineering, UNEP DTU Partnership

Media contribution (1)

Studying the Effectiveness of REDD+ Forest Allowances: Protecting forests, fighting climate change
01/03/2011
CIFOR, Web
CIFOR
Article on REDD+ research by Riyong Kim Bakkegaard
Riyong Kim Bakkegaard
Department of Management Engineering, UNEP DTU Partnership
Press / Media

International expertgroup for the ORCA project in The Netherlands
Kirsten Jørgensen
19/01/2011
Department of Management Engineering, Planning and Management of the Built Environment

Media contribution (1)

International expertgroup for the ORCA project in The Netherlands
19/01/2011
Other
Kirsten Jørgensen
Department of Management Engineering, Planning and Management of the Built Environment
Press / Media

Videnskab.dk: Rutsjebanetur bliver til moderne flycockpit
Alexandre Alapetite
04/12/2010

Description
Article regarding experiments on a roller coaster to evaluate the effect of turbulences when manipulating a touch screen, of relevance for the design of future aircraft cockpits
Department of Management Engineering, Safety, Reliability and Human Factors

Media contribution (1)

Videnskab.dk: Rutsjebanetur bliver til moderne flycockpit
04/12/2010
Videnskab.dk, Print
http://videnskab.dk/teknologi/rutsjebanetur-bliver-til-moderne-flycockpit
Online article at Videnskab.dk
Alexandre Alapetite
Department of Management Engineering, Safety, Reliability and Human Factors

Relations
Projects:
One Display for a Cockpit Interactive Solution
Press / Media
Evaluation of tactile interaction with a touch-screen during turbulences on a roller coaster to gather some knowledge for designing future aircraft cockpits.

Department of Management Engineering, Production and Service Management

Media contribution (1)

DR1: Ny teknik: Forskning i rutsjebanen
29/11/2010

DR1, Television
Danmarks Radio
2min
http://alexandre.alapetite.fr/research/odicis/#press

Video clip from DR1
Alexandre Alapetite
Department of Management Engineering, Production and Service Management

Relations
Projects:
One Display for a Cockpit Interactive Solution

Arbejdspladskultur: Hiv tabuerne ud af skabet
Vibeke Andersen
01/11/2010
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Arbejdspladskultur: Hiv tabuerne ud af skabet
01/11/2010
Print
http://www.dm.dk/NyhederOgDebat/DMFagligtNyt.aspx

PUB-OA
Vibeke Andersen
Department of Management Engineering, Work, Technology and Organisation

Ecodesign: A Challenge for Product Developers: Interview with Eco-designer Tim McAloone
Tim C. McAloone
01/10/2010
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Ecodesign: A Challenge for Product Developers: Interview with Eco-designer Tim McAloone
01/10/2010
Sweden, Print
http://www.mypaper.se/show/semcon/show.asp?pid=345278646566178&page=30

EXT-OA
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development

Danmarks Radio (DR): P4
Birgitte Hoffmann
23/09/2010

Description
Interview about the so called NIMBY effect – not in my back yard: Everybody can agree that windmills and institutions for disables are important - but not just in my back yard. We should nuance this concept and the situations in which it is used.
There might be many perspectives on local development and the actual placement of urban elements. They should be set into play to develop good solutions. It is a societal challenge to develop good methods and practices for in planning processes. This also demands that our planners develop the competences and skills needed to facilitate these complex processes.

Department of Management Engineering, Planning and Management of the Built Environment

**Media contribution (1)**

*Danmarks Radio (DR): P4*
23/09/2010
Radio
Birgitte Hoffmann
Department of Management Engineering, Planning and Management of the Built Environment

**Media contribution (1)**

*Danmarks Radio (DR); 30 min: P1 Apropos*
02/09/2010
Department of Management Engineering

**Media contribution (1)**

*Dygtige ledere er garant for det attraktive job*
Christine Ipsen
27/08/2010
Department of Management Engineering, Work, Technology and Organisation

**Media contribution (1)**

*Ingeniører til kamp for bedre arbejdsmiljø*
Christine Ipsen
27/08/2010
Department of Management Engineering, Work, Technology and Organisation
Ingeniører til kamp for bedre arbejdsmiljø
27/08/2010
Print
http://ing.dk/artikel/111322-ingenioerer-til-kamp-for-bedre-arbejdsmiljoe
DOC-OA
Christine Ipsen
Department of Management Engineering, Work, Technology and Organisation
Press / Media

Dygtige ledere er garant for attraktive job
Christine Ipsen
27/08/2010
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Dygtige ledere er garant for attraktive job
27/08/2010
Print
http://ing.dk/artikel/111300-dygtige-ledere-er-garant-for-det-attraktive-job
DOC-OA
Christine Ipsen
Department of Management Engineering, Work, Technology and Organisation
Press / Media

Lean med et menneskeligt ansigt: Det er muligt at undgå et dårligere psykisk arbejdsmiljø, når lean skal indføres, fastslår nyt forskningsprojekt
Kasper Edwards
01/07/2010
Department of Management Engineering, Production and Service Management

Media contribution (1)

Lean med et menneskeligt ansigt: Det er muligt at undgå et dårligere psykisk arbejdsmiljø, når lean skal indføres, fastslår nyt forskningsprojekt
01/07/2010
CO-Magasinet, Print
Dorthe KrAgh
http://www.co-industri.dk/Lists/COMagasiner/Attachments/3/COMag7-10_low.pdf
Kasper Edwards
Department of Management Engineering, Production and Service Management
Press / Media

Lean kan løfte arbejdsglæden
Kasper Edwards
07/06/2010
Department of Management Engineering, Production and Service Management

Media contribution (1)

Lean kan løfte arbejdsglæden
07/06/2010
UGEBREVET A4, Print
Lars Bertelsen
Kasper Edwards
Department of Management Engineering, Production and Service Management

Relations
Projects:
LEAN uden stress : Udvikling af et bæredygtigt produktionsprincip
Press / Media
Danskernes Akademi: Begejstring og Belastning
Christine Ipsen
18/05/2010
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Danskernes Akademi: Lean og arbejdsmiljø - Hvad sker det med arbejdsmiljøet når lean indføres?
Kasper Edwards
18/05/2010
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

DR 1 - Morgen: Forebyggelse af arbejdssulykker
Kirsten Jørgensen
17/05/2010
Department of Management Engineering, Planning and Management of the Built Environment

Media contribution (1)

Mellem begejstring og belastning
Christine Ipsen
11/05/2010
Department of Management Engineering

Media contribution (1)
Arbejdslivet efter lean
Kasper Edwards
10/05/2010
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Arbejdslivet efter lean
10/05/2010
Print
Kasper Edwards
Department of Management Engineering, Work, Technology and Organisation
Press / Media

Ugebrevet A4; 20
Kasper Edwards
06/05/2010
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Ugebrevet A4; 20
06/05/2010
Print
DOC-QA
Kasper Edwards
Department of Management Engineering, Work, Technology and Organisation
Press / Media

Stocktaking and prospects: Doctoral Training and Research
Zaza Nadja Lee Herbert-Hansen
11/03/2010
Department of Management Engineering, Production and Service Management

Media contribution (1)

Stocktaking and prospects: Doctoral Training and Research
11/03/2010
Euroscience, Web
Zaza Nadja Lee Herbert-Hansen
Department of Management Engineering, Production and Service Management
Press / Media

Dynamo: The course is set for safe manning
Alexandre Alapetite
01/03/2010
Department of Management Engineering, Production and Service Management

Media contribution (1)

Dynamo: The course is set for safe manning
01/03/2010
Dynamo, Print
DTU
Alexandre Alapetite
Department of Management Engineering, Production and Service Management

Relations
Projects:
Safe manning simulation tool
Press / Media
Bæredygtighed sælger: Miljøet er blevet et salgstrick
Stig Irving Olsen
28/02/2010
Department of Management Engineering, Quantitative Sustainability Assessment

Media contribution (1)

Bæredygtighed sælger: Miljøet er blevet et salgstrick
28/02/2010
Fyens Stiftstidende, Print
http://www.infomedia.dk.globalproxy.cvt.dk/ms/GetArticleFull.aspx?outputFormat=Full
EXT-CA
Stig Irving Olsen
Department of Management Engineering, Quantitative Sustainability Assessment

62-årig fik hånden revet af i godkendt maskine
Kåre Hendriksen
29/01/2010
Innovation and Sustainability, Department of Civil Engineering

Media contribution (1)

62-årig fik hånden revet af i godkendt maskine
29/01/2010
Fyns Stiftstidende, Print
Peter Welander
Kåre Hendriksen
Innovation and Sustainability, Department of Civil Engineering

Press / Media

Certifikat ikke garanti for at lov overholdes
Kåre Hendriksen
29/01/2010
Innovation and Sustainability, Department of Civil Engineering

Media contribution (1)

Certifikat ikke garanti for at lov overholdes
29/01/2010
Fyns Stiftstidende, Print
Peter Welander
Kåre Hendriksen
Innovation and Sustainability, Department of Civil Engineering

Press / Media

"Kom ud af osteklokken"
Zaza Nadja Lee Herbert-Hansen
01/01/2010
Department of Management Engineering

Media contribution (1)

"Kom ud af osteklokken"
01/01/2010
DTU Avisen, Print
http://ebook-creator.win.dtu.dk/E-books/DTU-Avisen/2010_4/#/20/
Zaza Nadja Lee Herbert-Hansen
Department of Management Engineering

Press / Media

Problemknuser i verdensklasse
Simon Spoorendonk
09/12/2009
Department of Management Engineering, Operations Research

Media contribution (1)

Problemknuser i verdensklasse
09/12/2009
Print
EXT-OA
Simon Spoorendonk
Department of Management Engineering, Operations Research
Press / Media

CO2-kvoter gavner klimaet
Kirsten Halsnæs
07/12/2009
DTU Climate Centre, Risø National Laboratory for Sustainable Energy, Systems Analysis Division

Media contribution (1)

CO2-kvoter gavner klimaet
07/12/2009
P1 Formiddag 07. december 2009 kl. 09:09, Radio
http://www.dr.dk/P1/P1Formiddag/Udsendelser/2009/12/02144121.htm
PUB-OA
Kirsten Halsnæs
Risø National Laboratory for Sustainable Energy, Systems Analysis Division, DTU Climate Centre
Press / Media

Spørg om hjælp til IT
Kasper Edwards
01/12/2009
Department of Management Engineering, Production and Service Management

Media contribution (1)

Spørg om hjælp til IT
01/12/2009
Kommunikation, Print
Maria Lynge Callesen
Kasper Edwards
Department of Management Engineering, Production and Service Management
Press / Media

Begejstring, der stresser
Vibeke Andersen
30/11/2009

Description
Note: Danmarks Radio P1 Morgen
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Begejstring, der stresser
30/11/2009
Radio
http://www.dr.dk/P1/P1Morgen/Udsendelser/2009/11/30/092102.htm
REL-OA
Vibeke Andersen
Department of Management Engineering, Work, Technology and Organisation
Press / Media
Grænsen for vækst?
Kirsten Halsnæs
29/11/2009
DTU Climate Centre, Risø National Laboratory for Sustainable Energy, Systems Analysis Division

Media contribution (1)

Grænsen for vækst?
29/11/2009
DR2 Deadline den 29. november 2009, Television
PUB-OA
Kirsten Halsnæs
Risø National Laboratory for Sustainable Energy, Systems Analysis Division, DTU Climate Centre

Dagbladet Information
Birgitte Hoffmann
20/11/2009
Department of Management Engineering, Planning and Management of the Built Environment

Media contribution (1)

Effektivisering behøver ikke at gøre ondt
Kasper Edwards
09/11/2009
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Konservativ og revolutionær klima-bogholder
Jørgen Villy Fenhann
01/11/2009
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Risø National Laboratory for Sustainable Energy, Systems Analysis Division

Media contribution (1)

Interview med Jørgen Fenhann i Nyhedsbladet Dansk Energi, nr. 14, november 2009, Print
Jørgen Villy Fenhann
Risø National Laboratory for Sustainable Energy, Systems Analysis Division, UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC)

Press / Media
Boost for carbon offset projects in Africa
Glenn Stuart Hodes
22/10/2009
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Rise National Laboratory for Sustainable Energy, Systems Analysis Division

Media contribution (1)

Virksomheder skeptiske over for vugge til vugge
Tim C. McAloone
16/10/2009
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Byggeriets globalisering kræver en ny innovationskultur og bedre bygherrer
Sten Bonke
14/09/2009
Department of Management Engineering, Planning and Management of the Built Environment

Media contribution (1)

Byggeriets globalisering kræver en ny innovationskultur og bedre bygherrer
Ib Steen Olsen
14/09/2009
Department of Management Engineering, Planning and Management of the Built Environment

Media contribution (1)
Klimaentusiast med vild drøm
Jørgen Villy Fenhann
01/09/2009
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Rise National Laboratory for Sustainable Energy, Systems Analysis Division

Media contribution (1)

Klimaentusiast med vild drøm
01/09/2009
Interview med Jørgen Fenhann i Berlingske Tidende d. 1. september, s. 24, skrevet af Bent Højgaard Sørensen, Print
Jørgen Villy Fenhann
Rise National Laboratory for Sustainable Energy, Systems Analysis Division, UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC)

Der er penge i CDM-projekter
Jørgen Villy Fenhann
27/08/2009
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Rise National Laboratory for Sustainable Energy, Systems Analysis Division

Media contribution (1)

Der er penge i CDM-projekter
27/08/2009
Interview med Jørgen Fenhann i Berlingske Tidende d. 27. august 2009 s. 10, Print
Jørgen Villy Fenhann
Rise National Laboratory for Sustainable Energy, Systems Analysis Division, UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC)

De ansatte glemmes når teknikken tager over
Kasper Edwards
01/08/2009
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

De ansatte glemmes når teknikken tager over
01/08/2009
Magasinet Arbejdsmiljø, Print
Birgit Bruun Christensen
Kasper Edwards
Department of Management Engineering, Work, Technology and Organisation

Skuffelse over G8 resultat
Kirsten Halsnæs
10/07/2009
DTU Climate Centre, Rise National Laboratory for Sustainable Energy, Systems Analysis Division

Media contribution (1)

Skuffelse over G8 resultat
10/07/2009
Danmarks Radio DR1, TV Avisen kl. 21, Television
http://www.dr.dk/odp/player.aspx?uniqueid=335829&mt=newstab&st=news_TVAvisen&furl=http%3A//www.dr.dk/odp/defautl.aspx%3Ftemplate%3Dnyhed%26guid%3DDR1200907102100%26autoplay%3D0%26back%3Ddefault.aspx%253Ftemplate%253Dnyheder%2526day%2525d0

DOC-OA
Kirsten Halsnæs
Risø National Laboratory for Sustainable Energy, Systems Analysis Division, DTU Climate Centre
Press / Media

Mød Kommissionen - Niels Buus Kristensen
Niels Buus Kristensen
01/07/2009
Traffic Safety, Department of Transport

Media contribution (1)

Mød Kommissionen - Niels Buus Kristensen
01/07/2009
DTU, Print
http://www.klimakommissionen.dk/da-DK/OmKlimakommissionen/moedkommissionen/Sider/NielsBuusKristensen.aspx
PUB-OA
Niels Buus Kristensen
Department of Transport, Traffic Safety
Press / Media

Danske svinefabrikker i krise
Kristian Borch
15/05/2009
Department of Management Engineering, Innovation Systems and Foresight

Media contribution (1)

Danske svinefabrikker i krise
15/05/2009
Radio
http://www.dr.dk/P1/klimaogmiljoe/Udsendelser/2009/05/15145705.htm
PUB-OA
Kristian Borch
Department of Management Engineering, Innovation Systems and Foresight
Press / Media

Sæt serviceudviklingen i system
Tim C. McAloone
07/05/2009
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Sæt serviceudviklingen i system
07/05/2009
Denmark, Print
http://ing.dk/artikel/98467-saet-serviceudviklingen-i-system
EXT-OA
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Produktservice kan skrue op for virksomhedernes indtjening
Tim C. McAloone
07/05/2009
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Produktservice kan skrue op for virksomhedernes indtjening
07/05/2009
Denmark, Print
http://ing.dk/artikel/98462-produktservice-kan-skrue-op-for-virksomhedernes-indtjening
Crunch time for the Clean Development Mechanism?
Glenn Stuart Hodes
09/04/2009
Department of Management Engineering, UNEP Risø Centre

Media contribution (1)

Crunch time for the Clean Development Mechanism?
09/04/2009
Nature Reports Climate Change, Print
Glenn Stuart Hodes
Department of Management Engineering, UNEP Risø Centre
Press / Media

Fra skrald til guldgrube
Tim C. McAloone
30/03/2009
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Fra skrald til guldgrube
30/03/2009
Denmark, Print
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Klimaks. Klimapolitik i praksis
Kirsten Halsnæs
09/03/2009
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Risø National Laboratory for Sustainable Energy, Systems Analysis Division

Media contribution (1)

Klimaks. Klimapolitik i praksis
09/03/2009
Jyllandsposten, Web
http://blogs.jp.dk/klimaks/
PUB-OA
Kirsten Halsnæs
Risø National Laboratory for Sustainable Energy, Systems Analysis Division, UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC)
Press / Media

Topkarakter til energibranchems innovation
Per Dannemand Andersen
16/02/2009
Department of Management Engineering, Innovation Systems and Foresight

Media contribution (1)

Topkarakter til energibranchems innovation
16/02/2009
Dagbladet Børsen, Mandag den 16. februar, Print
http://www.dbdh.dk/artikel.asp?print=yes&id=1376&mid=9
Fremtidens sofa under miljølup
Tim C. McAloone
16/02/2009
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Det grænseløse arbejde gør os syge
Vibeke Andersen
14/01/2009
Department of Management Engineering, Work, Technology and Organisation, Arctic Technology Centre

Media contribution (1)

Recycling wind; January/February 2009
Per Dannemand Andersen
01/01/2009

Description
Interview under the heading "Recycling Wind" prompted by an article in "Int. J. of Technology, Policy and Management, vol. 7, No.4, 2007
Department of Management Engineering, Innovation Systems and Foresight

Media contribution (1)
Renewed Energy Focus (Elsevier)
Per Dannemand Andersen
01/01/2009
Department of Management Engineering, Innovation Systems and Foresight

Media contribution (1)

Renewed Energy Focus (Elsevier)
01/01/2009
Print

Per Dannemand Andersen
Department of Management Engineering, Innovation Systems and Foresight

Hospital - Drift og Teknologi; 2009, nr 8: Større samarbejde sikrer byggeriet mod fejl og mangler, side 62-63
Kirsten Jørgensen
01/01/2009
Department of Management Engineering, Planning and Management of the Built Environment

Media contribution (1)

Partnering skal overleve lavkonjunkturen
Ib Steen Olsen
01/01/2009
Department of Management Engineering, Planning and Management of the Built Environment

Media contribution (1)

Nye ledelsesformer i forebyggelse af stress i videnarbejdet
Christine Ipsen
01/01/2009
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)
Nye ledelsesformer i forebygelse af stress i videnarbejdet
Mette Mogensen
01/01/2009
Department of Management Engineering

Media contribution (1)

Nye ledelsesformer i forebygelse af stress i videnarbejdet
Vibeke Andersen
01/01/2009
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Det er gratis at tænke miljø ind i produktet
Tim C. McAloone
05/12/2008
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Miljøforbedringer gennem produktudvikling betaler sig
Tim C. McAloone
01/12/2008
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)
DENMARK, PRINT
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

DR1: Robot styres med øjnene
Alexandre Alapetite
21/11/2008

Description
The use of gaze interaction to control a mobile robot
Department of Management Engineering, Production and Service Management

Media contribution (1)

DR1: Robot styres med øjnene
21/11/2008
DR1, Television
Danmarks Radio
3min
http://alexandre.alapetite.fr/divers/robot/mobile-laptop2/#media
Video clip from DR1
Alexandre Alapetite
Department of Management Engineering, Production and Service Management

Relations
Research outputs:
Demo of Gaze Controlled Flying
Gaze-controlled Driving
Press / Media

Kunde og leverandør har fælles interesse i partnerskaber – Interview med Tim McAloone
Tim C. McAloone
01/11/2008
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Kunde og leverandør har fælles interesse i partnerskaber – Interview med Tim McAloone
01/11/2008
Denmark, Print
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Om Københavns vand
Hanne Lindegaard
05/10/2008
Department of Management Engineering, Innovation and Sustainability

Media contribution (1)

Om Københavns vand
05/10/2008
University of Copenhagen, Radio
Hanne Lindegaard
Department of Management Engineering, Innovation and Sustainability
Press / Media

Bionik - med naturen som forbillede: (Biomimetics - with nature as a role model)
Torben Anker Lenau
04/10/2008
Department of Management Engineering, Innovation and Sustainability
Bionik - med naturen som forbillede: (Biomimetics - with nature as a role model)
04/10/2008
Danish Radio, Radio
http://podcast.dr.dk/P1/VIDENSKABENSVERDEN/2008/VV_081004.mp3
Torben Anker Lenau
Department of Management Engineering, Innovation and Sustainability

African Carbon Forum
John M. Christensen
03/09/2008
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Rise National Laboratory for Sustainable Energy, Systems Analysis Division

"Nej, det er ikke din skyld"
Christine Ipsen
06/07/2008
Department of Management Engineering, Work, Technology and Organisation

Små virksomheder er afhængige af internationale netværk
Tim C. McAloone
06/06/2008
Department of Management Engineering, Engineering Design and Product Development

Klimaøkonomien kræver nye forretningsmodeller
Tim C. McAloone
26/05/2008
Department of Management Engineering, Engineering Design and Product Development

Klimaøkonomien kræver nye forretningsmodeller  
26/05/2008  
Denmark, Print  
Tim C. McAloone  
Department of Management Engineering, Engineering Design and Product Development  
Press / Media

Produkter til den tredje miljøbølge  
Tim C. McAloone  
23/05/2008  
Department of Management Engineering, Engineering Design and Product Development  
Media contribution (1)

Produkter til den tredje miljøbølge  
23/05/2008  
Denmark, Print  
Tim C. McAloone  
Department of Management Engineering, Engineering Design and Product Development  
Press / Media

Interview i radioavisen om road pricing  
Camilla Riff Brems  
27/02/2008  
Modelling Centre, Department of Transport  
Media contribution (1)

Interview i radioavisen om road pricing  
27/02/2008  
Radio  
Camilla Riff Brems  
Department of Transport, Modelling Centre  
Press / Media

Vidensarbejdere - begejstring og belastning: Vidensarbejderne søger hele tiden ud over grænsen i bar begejstring over deres arbejde. Det belaster.  
Vibeke Andersen  
25/01/2008  
Department of Management Engineering, Work, Technology and Organisation  
Media contribution (1)

Vidensarbejdere - begejstring og belastning: Vidensarbejderne søger hele tiden ud over grænsen i bar begejstring over deres arbejde. Det belaster.  
25/01/2008  
Print  
DOC-OA  
Vibeke Andersen  
Department of Management Engineering, Work, Technology and Organisation  
Press / Media

Vidensarbejdere - begejstring og belastning: Vidensarbejderne søger hele tiden ud over grænsen i bar begejstring over deres arbejde. Det belaster.  
Anders Buch  
25/01/2008  
Department of Management Engineering, Work, Technology and Organisation  
Media contribution (1)

Vidensarbejdere - begejstring og belastning: Vidensarbejderne søger hele tiden ud over grænsen i bar begejstring over deres arbejde. Det belaster.
Kollegaen ta’r over når krisen kradser
Christine Ipsen
07/12/2007
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)

Den tredje miljøbølge
Tim C. McAloon
23/11/2007

Description
Note: in Ingeniørens produktudviklingsmagasin
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Det faste forhold som forretningsmodel
Tim C. McAloon
29/01/2007
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Design skal få verden til at bære over med os
Tim C. McAloon
22/12/2006

Description
Note: Offentliggjort i Politiken
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)
Design skal få verden til at bære over med os
22/12/2006
Print
Tim C. McAlone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

En bæredygtig kontorstol
Tim C. McAlone
07/11/2006
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

En bæredygtig kontorstol
07/11/2006
Print
Tim C. McAlone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Ingeniører er usikre på mål og forventninger
Christine Ipsen
29/09/2006
Department of Management Engineering

Media contribution (1)

Ingeniører er usikre på mål og forventninger
29/09/2006
Print
Christine Ipsen
Department of Management Engineering
Press / Media

Miljømærker fortæller kun den halve sandhed
Tim C. McAlone
23/09/2006
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Miljømærker fortæller kun den halve sandhed
23/09/2006
Print
Tim C. McAlone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Globalt treholdsskift øger effektiviteten
Tim C. McAlone
26/05/2006
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Globalt treholdsskift øger effektiviteten
26/05/2006
Print
Tim C. McAlone
Department of Management Engineering, Engineering Design and Product Development
Press / Media
Videnarbejde stresser medarbejderne
Christine Ipsen
21/04/2006
Department of Management Engineering

Media contribution (1)

Videnarbejde stresser medarbejderne
21/04/2006
Print
Christine Ipsen
Department of Management Engineering
Press / Media

Verdens 20 Mest Innovative Virksomheder
Tim C. McAloone
03/04/2006
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Verdens 20 Mest Innovative Virksomheder
03/04/2006
Print
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

DTU i spidsen for miljørigtig konstruktion
Tim C. McAloone
17/03/2006
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

DTU i spidsen for miljørigtig konstruktion
17/03/2006
Print
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Dårlig samvittighed plager de ambitiøse
Christine Ipsen
10/02/2006
Department of Management Engineering

Media contribution (1)

Dårlig samvittighed plager de ambitiøse
10/02/2006
Print
Christine Ipsen
Department of Management Engineering
Press / Media

Stress-ramte virksomheder taber værdifuld viden
Christine Ipsen
10/02/2006
Department of Management Engineering, Work, Technology and Organisation

Media contribution (1)
Stress-ramte virksomheder taber værdifuld viden
10/02/2006
Print
http://ing.dk/artikel/68922-stress-ramte-virksomheder-taber-vaerdifuld-viden
Christine Ipsen
Department of Management Engineering, Work, Technology and Organisation
Press / Media

Tovtrækning om den innovative elite
Tim C. McAloone
30/01/2006
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Tovtrækning om den innovative elite
30/01/2006
Print
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Sustainability as a driver for innovation
Tim C. McAloone
13/11/2005
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Sustainability as a driver for innovation
13/11/2005
Print
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Livskvalitet driver fremtidens milliardindustrier
Tim C. McAloone
12/09/2005
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Livskvalitet driver fremtidens milliardindustrier
12/09/2005
Print
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Press / Media

Nye opfindelser på rekordtid
Tim C. McAloone
06/06/2005
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Nye opfindelser på rekordtid
06/06/2005
Print
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development
Nyt center skal nytænke produktudvikling
Tim C. McAloone
11/04/2005
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Produktudviklingslandkortet placerer kompetencerne
Tim C. McAloone
01/12/2004
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

DTU har lavet landkort over dansk innovation
Tim C. McAloone
28/08/2004
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Det er muligt at gøre en forskel
Tim C. McAloone
27/08/2004
Department of Management Engineering, Engineering Design and Product Development

Media contribution (1)

Jagten på innovationen
Tim C. McAloone
27/08/2004
Department of Management Engineering, Engineering Design and Product Development
Jagten på Innovationen
27/08/2004
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development

Bilfabrikker som forbillede for produktudvikling
02/05/2004
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development

Alarmerende behov for nye udviklingsmetoder
28/02/2003
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development

Produktudvikling der støver
28/09/2001
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development

Miljø-design kræver ny strategi
26/05/2000
Tim C. McAloone
Department of Management Engineering, Engineering Design and Product Development