DTU says yes to operational friendly buildings but how should it be done in practice?

Rasmussen, Helle Lohmann; Nielsen, Susanne Balslev; Møller, Anders B.

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DTU says yes to operational friendly building but how should it be done in practice?

By Helle Lohmann Rasmussen, Susanne Balslev Nielsen and Anders B. Møller

Facilities managers often fight to be allowed to contribute their operational experiences to new building projects, but not at Campus Service of the Technical University of Denmark (DTU), where “ask the operations manager” has become a mantra for every building project in recent years, and there are currently 15 building projects under way. But how is this knowledge transfer organized in practice so that both the buildings department and the operations department maintain a good and effective relationship?

Operational knowledge for building

Knowledge transfer from operations to new construction is a current topic in the building sector and is expected to contribute to increased quality in building. DTU has been a major builder in recent years and with its own operational organization has good prospects for transferring knowledge from operations to new construction. At DTU’s FM organization, Campus Service (CAS), the potential in assimilating operational knowledge was seen a long time ago, and development in the area is rapid. For example, the CAS approach attracts multi-builders such as municipalities, pension funds and others who have concentrated operations and new construction in one organization, or who are trying to achieve operational friendly construction and redevelopment.

This study, based on a long series of recommended approaches to ensure knowledge transfer from operations to construction, looks at how CAS what barriers make the effort more challenging. The programming phase is considered by many to be the most significant phase to help operations and maintenance, and it is in this phase that the study was carried out.

CAS in development

There is considerable knowledge of operations in CAS and there is great ambition to use this knowledge in new construction. However, it was apparent when new buildings were taken over in 2012 that the buildings were not as operational friendly as desired. This experience has led the staff and management to adopting a greater focus on developing a CAS approach which integrates operational knowledge into DTU’s buildings. The challenges in integrating operational knowledge in construction projects include bringing in the right people, making decisions at the right management level, looking for the right knowledge, and delivering the knowledge required in the right form and often within deadlines that conflict with other pressing tasks.

Starting with Helle’s own experiences as the project leader in the operations department followed by interviews with representatives for the building and operational organization projects, a picture has taken shape of which researched approaches are used in DTU, which approaches are found to be effective and functioning well and which are not yet thought to be working well. The results can be seen in figure 2.

The study shows that CAS already uses many of the approaches recommended in FM literature and even approaches not described in the literature. Thus, CAS appears to have come a long way with the work and the buildings that are now being devised are integrating operational knowledge to a high degree. Approaches such as a detailed building plan, a plan for inclusion of operational knowledge of the individual projects and requirements for reduction of energy and use of resources are fully incorporated in the planning of the construction projects. Other approaches are being used but do not seem to have found the right form yet. However, obstacles are being encountered in the use of the methodologies and it is not clear...
how consistently they are used. There is potential for more operational
departmental developments in CAS by amending these approaches, and it
appears that some of the approaches are unnecessarily resource-intensive
in their current form.

**Continued development**

The study identifies three
approaches that CAS is advised to
implement first. They are:
1. FM commenting and scrutiny,
2. standards for DTU construction and
3. requirements for operational
friendliness in the construction programs.

These are approaches that are
already quite developed, but with
adjustments they are expected to
give a marked increase in transferred
knowledge. The clear distribution
of roles and responsibilities and
clear prioritization of operational
friendliness are hallmarks of the
changes.

In addition to proposals to improve
approaches at an operational level, the
study also gives rise to considerations
related to the nature of the leadership.
Attention is drawn to maintaining a
balance between the management
paradigms: bureaucracy and
relationships. A stepwise development
with a high degree of involvement,
supported by clear agreements and
guidelines, can be a successful route.
The study also indicates that the
operational strategy for knowledge
transfer to the construction projects
is centered on the leaders of the
operational sectors. It is important
that this strategy is clear to the whole
organization, and that the operational
organization’s role in the projects is
delegated to the section managers.

The study also indicates that in
both the operational and construction
management departments a great effort
is being made to transfer knowledge
from operations to new construction,
but that to a varying degree, and
tirely in accordance with the
findings in the literature, obstacles are
encountered with the transfer.

**Approaches that work well**

The following lists the approaches which work well according to the study.

- Detailed building plan (B)
- Ongoing programming (B)
- Plan/agreement of operations involvement in every project (B)
- Requirement in the program on working environment (B)
- Requirement in the program on minimization of energy and use of
  resources (B)
- Requirement in the program on flexibility (B)
- Professional building management organization (Management)
- Operations represented in management group (Management)
- FM seen as strategic discipline at DTU (Management)
- Cross-cutting arrangements in CAS encouragement relationships
  (Management)

**Approaches used but can be improved**

- Clear prioritization of operational friendliness in CAS (Management)
- Clear strategy to include operations (Ops)
- Requirements that ought to be included in the building program to allow
  future operational friendliness (B)
- Standards for DTU building (Ops)
- Use of total economy in selection of solutions, including for changes (B)
- Internal comments (Ops)
- “Bridge-builder”/FM contact person (Ops)
- Requirements for O&M materials / plan for use of inputs (Ops)
- “Safety net” for poorly-timed comments in projects (B)
- Requirement in the program for delivery of O&M material (B)
- Relationship-building approach between the operational management and
  external advisers/entrepreneurs (B)

**Approaches which CAS states are to be added**

- Ongoing Commissioning (Ops)
- Requirement for operational budget and plan (Ops)
- Clear borders of responsibility (Ops)

**Further relevant approaches not currently in use**

- FM scrutiny (Ops)
- POE (B)
- Introduction to building design for operational staff (Ops)
- Use of guides to the area (B/Ops)
- Limits to expertise/further training, e.g. in FM scrutiny (Ops)
- Divided project leadership (B/Ops)

**Conclusion**

This article is written as a
challenge to develop strategies and
processes where relevant for
a constructive and effective dialogue
between the leadership, operational
management organization
and building management organization
on operational considerations
in the planning of buildings and
reconstruction. It may be useful to
distinguish between the organization
skills that we want available and that
of the specific construction projects
and project-determined objectives
and requirements for operational
friendliness. As shown, CAS is well
under way in improving this in this
and by sharing these experiences and we
hope to inspire others to test and to
develop their own processes and
approaches.

Campus Services has the objective
of operating, maintaining and
developing DTU’s buildings, areas
and facilities, and ensuring that
researchers, other staff and students
have the best possible physical
working conditions.

The aim of the work of Campus
Services is that DTU’s buildings,
surroundings and facilities are
seen as attractive by the staff
and students, but also that other
companies and society see
DTU and its facilities as an active
establishment that they are glad to
use and work with.

DTU has institutes spread over
17 locations in Denmark and
Greenland. Campus Services has
permanent staff at 7 of these
locations: Lyngby, Riso, Mørkhøj
(Søborg), Frederiksberg, Ballerup,
Lindholm Ø and Århus.

In addition, Campus Services
supervises the building activity at
all other DTU locations.

**Facts about 2013:**

FTE staff in the year: 189
Turnover: DKK 931 million
(distributed between operations
including salaries for the whole
of CAS = DKK 672 million
and operational expenses = DKK 259
million)

**Links for more information:**

1. DTU Campus Service
   http://www.dtu.dk/Om-DTU/
   Organisation/Administration/
   Campus_Service
2. 2. Value Creating Construction
   Process
   http://www.vaerdibyg.dk/
   Center for Facilities
   Management
   http://www.cfm.dtu.dk

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**Figure 2:** Overview of approaches for the transfer of operational knowledge to building
projects and their use at DTU. It is noted in parentheses who should hold responsibility, even
if several parties should contribute. B = Building department; Ops = Operations department;
Management = Management group/other management