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 with uncertainty due to lack of knowledge. Possibilities for overcoming industrial PSS risk management challenges are suggested through application of post-probabilistic methods. We conclude with the discussion on the importance for the field to consider their application.

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