Knotworking – changing the game in the building design processes?

- Danish experiences with Knotworking (IPD) – intensive collaboration between client, user, consultants and other stakeholders and new perspectives for the usage of BIM/ICT.

Intro: The construction sector using processes, which are implicit accepted and standardized to such an extent that they as coherent whole contains an inertia, which complicates any improvement initiatives. The problem is based on a series of timeless fiction of the industry's engine compartment is full of noise, but no one has been able to find the method to adjust the engine while it is running. Despite massive investment in change programs focused on effective collaboration, higher productivity and digitization, is construction efficiency and error amounts still unchanged. The actors in the build environment work in separate silos, and their mutual interaction is limited to formal meeting activity. Many different actors with occasional interaction of users and developers carry out the design of the building. Both consultant; user/developer - and later contractor - are located at different locations with different working methods, terminology, tools, structures and cultures, therefore knowledge becomes inefficient and is often used as disclaimer and personal positioning more than true sharing of expertise.

Our paper describes Knotworking and the results of a case in a Danish context, where we have used BIM modelling, calculations and energy simulation. Benefits and challenges of implementing Knotworking as collaborative learning, collaboration, themes (knots) and the use of digital tools shall be analyzed, discussed and concluded. One of the key issues in Knotworking is to explore and develop a common understanding and solution of the tasks through model-based tools and IT simulations. Through thematizations (knots) and the establishment of different scenarios, the technology (BIM) and the collaborative workshop model allow clients, users and consultants to take informed decisions on future construction at an early stage.

The Knotworking workshops was the epicenter for our engagement and research, we participated in the workshops as facilitators, so we have played an active role in the Knotworking processes. We have used participatory design methods, for instance used videos for documentation and later analysis. We have used Case Study methods for following and analyzing the building project in the first Danish Knotworking. To study the entangling of technology, work and organization, we use Orlikowski’s understanding of sociomaterial practices and Engeströms Activity model.

Our findings shows that facilitated collaboration between stakeholders, with the usage of BIM/ICT (Knotworking) can gain promising results. To change the game in the construction industry we still need new ideas and perspectives. New ways of working with BIM/ICT - technology driven collaboration - can get important insights from social research. Finally, we suggest further research and development concerned with Knotworking in construction projects.