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PhD Thesis: Linking Virtual Models with Physical Objects in Construction. Aalborg : Department of Civil Engineering, Aalborg, 2009. 282pp (DCE Thesis; 21)

Abstract: The Industrial PhD study concerns cross-disciplinary use of virtual object oriented 3D models in the building process. The project focuses on integration and utilization of engineering virtual building models with ICT tools used during the construction process. In recent years, virtual 3D models have proven their worth in practice relating to building design. However, there is still much unutilized potential in the virtual models, especially in the constructional and operational phases. A part of that potential forms the idea behind this Industrial PhD study.

A concept for how the digital link can be made to achieve the more rational data and information handling in the construction process by use of virtual 3D models is developed during the Industrial PhD with focus on the people and activities that are part of the construction process. The creation of a digital relationship between the physical reality and the time dependent virtual 3D model gives many opportunities to develop further applications which can analyze the building process, visualize time management, do automatic quality assurance etc.

The work with the Industrial PhD study is split up into several intermediate objectives to encourage a targeted working process. The objectives include analysis of the state of the art in the study area, business analysis of prospective products and services, analysis of services and ontologies, contextual analysis of the building process, software prototype development and analysis of the possibilities for practical implementation. All of the objectives are important to fulfill the final goal, a concept for how the potentials in linking virtual models with physical objects can be achieved.

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PhD collaboration: Kim Jacobsen and Thomas Simoni, Rambøll Denmark

Opponents: Associate Professor Kaj Asbjørn Jørgensen, Aalborg University, (Chairman) Professor Christian Koch, Aarhus University and Associate Professor Rafael Sacks, Israel Institute of Technology

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