STRETCHING THE TROUSERS TOO FAR?

Convening societal and ICT development in the architectural and engineering practice

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Abstract. The publicly and privately funded national R&D program ‘Digital Construction’ was initiated in 2003 in order to establish a common platform for interchanging digital information and to stimulate digital integration in the Danish building industry. This paper explores the relation between visions, strategies and tools formulated in the ‘Digital Construction’ program, and the first experiences made from implementing the 3D work method part of the program in an ongoing building project. The discussions in the paper are placed in the complex field between choosing strategies for integrating information and communication technologies on national level, and the effects of these strategies on real life building projects.

1. Introduction

Information and communication technologies (ICT) are for good reason heavily linked to future prosperity and growth in a range of European countries. However, the Architecture-Engineering-Construction (AEC) industry has been slow in turning the potential of ICT and CAD into increased efficiency and quality (Gann 2000; Wikforss 2003), and the productivity status in the AEC-industry described in the Latham report in 1994 (Latham 1994), still gives raise to concerns. Based on this context, several international and national initiatives for integrating ICT in the AEC-industry have emerged. In Denmark the national research and development (R&D) program “Det Digitale Byggeri” (Digital Construction), co-funded by public and private sources, was initiated in 2003, in order to establish a
common platform for interchanging digital information and to stimulate digital integration in the Danish AEC-industry (EBST 2005). The R&D program ended in March 2007.

This paper explores the relationship between the expectations, strategies and tools formulated in the ‘Digital Construction’ program and the benefits and challenges experienced from implementing and using 3D object models in practice. Are the trousers stretched too far regarding the convening of societal and ICT development in the architectural and engineering practice? The analysis will be based on an ongoing evaluation of this R&D program and the first experiences made from implementing a part of the program in the building design process of the new Icelandic National Concert and Conference Centre in Reykjavik (CCC-project). The discussion points on the challenges from convening societal and ICT development in the architectural and engineering practice.

2. Method

The discussions and analysis regarding the ‘Digital Construction’ program are based on the results from a qualitative process evaluation. Initiated by EBST (The National Agency for Enterprise and Construction, a Danish public body within the resort of the ministry of Economy and Business), the evaluation started in the winter of 2004. Seeing the Danish ‘Digital Construction’ program from a process evaluation point of view gives the possibility to evaluate the dynamic development of the program (Van de Ven 1999; Patton 1990, 1998). The process evaluation has been documented in four intervention and status notes of the program’s progress (Koch and Haugen 2006). The process evaluation is based on an array of methods: interviews, participant observation and desk research. Just above forty interviews have been carried out, comprising biannual interviews with project managers from EBST and project managers representing the various active development consortia within the program, the surrounding learning network etc. The exploration of the experiences made from implementing ‘Digital Construction’ in the CCC-project build on the first findings from a qualitative case study of the project (Yin 2003). Around 12 semi-structured interviews (Kvale 1997) have been carried out in 2006 with architects and engineers involved in building design and management. Documentary analysis and observation of design meetings are further sources of the empirical data. The brief glimpses into other national and international initiatives for integrating ICT in the AEC-industry are based on interviews with key actors involved.

A research framework has been developed and applied for supporting the exploration of the ICT impact on the architectural design process (Moum 2006). The framework is based on the suggestion of three levels; a macro-