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The role of VDC professionals in the construction industry

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Abstract

The increasing use of Virtual Design and Construction, VDC, is changing the way of working in the construction industry. With the introduction of VDC follows the creation of new roles and new ways of communicating within construction projects. The overall aim of the present paper is to map industry practitioners' view on VDC professionals' role. This includes mapping their perceptions on what characteristics a VDC professional should possess, what roles they play today and what role they should play in the future, and also to what extent they are perceived to contribute to project success. In order to shed light on these questions a questionnaire was sent to respondents working in varying degrees with VDC, in one of Sweden's largest construction companies. The results show that there is little agreement concerning the goals of VDC within the company. Furthermore, opinions also vary considerably with regards to what responsibilities a VDC professional ought to take within projects, and at the same time expectations of the characteristics of a VDC professional are high. Finally, the results show that there is demand for higher involvement of VDC professionals as compared to their current involvement.

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1. Introduction

The entrance of virtual prototyping and the introduction of new multi-dimensional technologies, such as 3D planning and Building Information Modelling (BIM) are predicted to change the way of working within the architecture, engineering and construction (AEC) industry (Elmualim and Gilder, 2014; Akintoye et al., 2012; Bosch-Sijtsema, 2013). VDC, here used synonymously with BIM-management in a broader sense (Volk et al., 2014), includes these new virtual technologies but also novel management approaches for organizing, communicating and collaborating in construction projects (Kunz and Fischer, 2012). VDC and BIM is claimed to improve design quality, construction safety and management efficiency in form of reduced costs and time for construction projects (Xu et al., 2014; Bryde et al., 2013; Huang et al., 2007). It is also believed to improve productivity and project performance (Azhar, 2011). Facilitating the sharing of information and knowledge between different actors throughout the whole construction process, VDC are also believed to fundamentally change the way information are communicated and transferred during and between the different stages of a construction process (Bosch-Sijtsema, 2013; Russell et al., 2013).

To organize and handle the diversity of project data and the distributed information connected to a complex BIM model is not a small task, and requires management (Weygant, 2011). To handle this new way of information flow and support the changed way of working specialized staff and competence is needed as a new knowledge domain is created through the introduction of VDC and BIM (Elmualim and Gider, 2013; Akintoye et al., 2012). To meet this need of expertise knowledge and specialist skills within the AEC industry some researchers have suggested an introduction of a new profession (Mourgues et al., 2007; Russell et al. 2013). Others have suggested that instead of a new profession the new way of working should be in cooperated within existing roles (CURT 2010, in (Russell et al., 2013). Irrespectively, the introduction of these new technologies and work methods within established working environment has nurtured a development of new VDC related roles in the AEC industry (Jaradat et al., 2013). Bosch-Sijtsema (2013) for instance identifies two roles; one technical professional role and one facilitator role, where the facilitator would manage the information and communication flow within the project whereas the technical professional would handle the virtual model. Weygant (2011) take another approach and unites these roles and suggest an introduction of a specific knowledge manager as: “a hybrid of specifier, CAD manager and BIM content developer”.

In order to act and influence, these professionals are dependent on how their role and practice are received and established within the organization as well as in the AEC industry as a whole. Thus, in order to utilize the possibilities of VDC it is crucial to not only educate specialists and experts within VDC but also all employees within the AEC process (Elmualim and Golder, 2013; Mourgues et al., 2007). To have basic skills regarding the use of VDC and BIM methods and tools are believed as unavoidable for professionals active in the AEC industry (Russell et al., 2013).

However, lack of clarity regarding roles and responsibility has been identified as some major barriers for the introduction and fully utilization of VDC and BIM (eg. Gu and London, 2010). To create clarity regarding roles and functions of VDC professionals present paper map practitioners’ perceptions on what characteristics a VDC professional should possess, what roles they play today and what role they should play in the future, and also to what extent they are perceived to contribute to project success.

2. Method

The studied company is one of the leading construction and property developing companies in the Nordic region with approximately 20 000 employees and a turnover of circa 60 billion SEK (year 2013). The company develops and builds residential and commercial properties, industrial facilities and public buildings, roads, civil engineering structures and other types of infrastructure divided into three business areas: Industrial, construction and civil engineering, and development.

To collect the quantitative data a questionnaire survey was sent out to employees in the company. The focus of

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