The Implementation Potentials of BIM in Bridge Maintenance Workflows

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Abstract

The present research deals with the experimental implementation of the BIM method in the field of bridge maintenance in order to identify its application potentials. The study was carried out in cooperation with the municipal department for bridge maintenance in Vienna as part of the "Public Administration 4.0" project. To enable the elaboration, the use case in bridge maintenance had to be limited, which was then adapted for bridge inspection due to the high potential for successful digitalization. The BIM-model was used as a central information hub that continuously collects relevant information and data of a certain bridge structure. It was crucial to integrate the BIM-model into a suitable software application such as *PlanRadar* and to verify its applicability in the field. As a result, the bridge inspection process could be successfully digitalized and great potential is shown for the use of BIM to make routine processes more efficient and transparent.

Keywords: bridge inspection; bridge maintenance; BIM; central information database; maintenance workflow.

1 Introduction

The research project "Public Administration 4.0" carried out by the University of Applied Sciences FH Campus Wien deals with the impact of digitalization on public administration institutions. In order to be able to investigate the impact of a digitalized process on public authorities, it is necessary to work through a practical example at an administrative facility. Due to the importance of the maintenance phase concerning infrastructures it was decided to perform the research process in the structural safety group of the Municipal Department 29 Bridge Construction and Foundation Engineering, the MA 29. The activity field of bridge inspection during the maintenance phase of bridges or similar was explicitly selected, because the common processes are analog and therefore great potential for digitalization was identified. Since the strategic orientation of the City of Vienna deals amoung others with the implementation of Building Information Management in public administration, it was proposed to carry out the planned digitalization with BIM methods. BIM is considered as a driving force for innovation and efficiency improvement within bridge infrastructure planning, design, erection and maintenance. It focuses on reworking manual and therefore possibly subjective influenced processes of the construction management workflow through the entire lifecycle of an asset. Within the lifetime of a bridge, high costs arise in the maintenance phase, [1] this results in significant potential for increasing efficiency through the possibilities of digitalization. A main objective of the present research project was the investigation of how Building Information Management can be tested in and by the MA 29 and whether this could result in implementation potentials in the workflow of bridge inspection. The following section deals with bridge maintenance and shows the goals and processes in