

OPEN BIM APPROACH FOR EFFICIENT SERIAL BRIDGE MODELING

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SUMMARY

Designing bridge structures by using the building information modelling (BIM) methodology is generally considered as a challenge in structural engineering of infrastructure. In the paper we present an advanced BIM approach by multidisciplinary team collaboration, supported by an innovative BIM bridge design solution. A complex and large railway project with several bridges was chosen to highlight the benefits and efficiency of open BIM technology. The process could be chosen as standard for similar projects in bridge industry.

Keywords: *Rail Infrastructure, Bridge Modeling, Open BIM, Serial Design, Efficiency, Multidisciplinary.*

1. INTRODUCTION

Increasing efficiency and precision are considered the most important effects of applying BIM (Building Information Modelling) in bridge design and planning. These impacts on project performance prove also being an essential factor for the general acceptance of BIM in AEC industry dealing with complex structures. Naturally, these effects are commonly vital for the economic success of the project.

A big amount of geometric and semantic data are usually collected in the BIM modelling process throughout the planning and construction phase of bridge projects. They are regularly analysed and visualized, and finally handed over to the contractor and/or the operator/client. Creating a digital twin is actually the ultimate goal, allowing to cover the entire lifecycle of the structure.

Most BIM-relevant data delivered to the client do in fact make a perfect base for developing subsequent infrastructure of similar type and/or for structures having the same properties. It has been becoming clear from the last years of BIM development that this step is still conditional and requires the availability of parametric modelling techniques and a capable software solution for handling parametric data in case these benefits should fully materialize.

Therefore, a common BIM approach is only a first step in creating transparent and precise bridge design models, but using parametric BIM technology must be the target, in order to capture the full efficiency potential for serial BIM modelling.

2. OPEN BIM WORKFLOW

The German infrastructure Business Unit of Pöyry Deutschland has developed an Open BIM Workflow in order to ensure interoperability and effectiveness of different software solutions. The Open BIM Workflow scheme covers different design stages and roles during a typical project flow in infrastructure, represented by different partners, tools and BIM uses (see Fig. 1).