



Towards a Holistic Bridge BIM Solution

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Abstract

A new BIM solution tailored for bridge engineering has recently been developed, with the ambition of successively covering all tasks related to bridge design, construction, and management throughout lifetime.

Currently, the solution already contains a variety of bridge design functionality from parametric modeling to structural analysis and checking procedures. Based on an intelligent 4D model of the structure including the construction timeline in addition to the parametrically described geometric model, an appropriate analysis model is automatically created.

The paper describes the current functionality and recent successful practical use cases and gives an outlook to the considered future extensions.

Keywords: BIM Technology, Bridge Engineering, Geometric Modelling, Structural Analysis, Construction Simulation, Reinforcement Detailing

1 Introduction

In the past 2 decades, various attempts have been made to introduce BIM technology in infrastructure planning and construction projects. However, using techniques originally developed for buildings design did not prove successful.

BIM (Building Information Modelling) is generally conceived as overall strategy for coordinating all required works arising during design, construction, and operating phases of structural objects. This

goal is achieved by using an integrated digital model of the structure, and procedures directly communicating with it in all task settings throughout planning, construction, and lifetime. The aim is to essentially ease and accelerate the processing by avoiding errors due to multiple and redundant data entry as well as to improve the overall quality. The effectivity of the BIM process is very much dependent on its consistent application in different use cases throughout the design and construction time and later.