

Linking BrIM to BMS for bridges – concepts.

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Abstract

Bridge Information Model (BrIM) is currently replacing drawings as main deliverable in new bridge project. Several use cases for BrIM over its lifetime is identified, as well as a discussion of the use case potential. Use cases include, but are not limited to, linking Bridge Management Systems (BMS) and BrIM, handling inspection data, visualizing inspection results and damage, tracking maintenance actions and structural changes. It may also serve for the analysis of residual strength, as digital twin in structural health monitoring (conditional maintenance) and as risk-based decision-making tool for the allocation of resources.

Thus, this paper will form a basis for updates of relevant IFC classes in the BrIM data structure to facilitate seamless communication between BrIM and BMS systems. Thereby the grossly different level of detail in BrIM (individual objects), GIS (road network) and BMS (asset portfolio), the data aggregation and drill-down, and the portability of existing data collections are major concerns.

Keywords: Asset Management, Bridge, Inspection, Maintenance, digital twin, BrIM, BMS, BIM, IFC,

1 Introduction

The ambition of many bridge owners is that BrIM shall be used during the whole life cycle of the structure, from initial design phase, through construction, operation, and maintenance until it is removed and recycled at the end of service – a one-stop-shop for information. Operation and

maintenance data is currently collected in various forms and stored in different repositories as part of a BMS. To optimize maintenance of the individual structural asset and manage the asset as portfolio of structures it is beneficial if BrIM and BMS are linked such that information can be exchanged seamlessly, also for existing structures that currently do not have a BrIM model.