

Abstract

The Federal Ministry of Transport and Digital Infrastructure (BMVI) requires the comprehensive and area-wide use of Building Information Modeling (BIM) in road construction through the step-by-step plan Digital Construction and Operation. According to this, modern, IT-supported processes and technologies are to be used for infrastructure projects in planning, construction and operation similar to the structures in building construction. The project is dedicated to the application of the BIM method in conformity with the regulations of the German Road and Transportation Research Association (FGSV) and the committee “Coordination of Bund-Länder Information Systems in Road Engineering” (IT-Ko).

The development of a BIM-compliant object catalog for transportation and road construction serves as a first basis for a uniform application of the BIM method in infrastructure projects. The implementation took place in the form of a database, in which the most important terms and definitions of the rules and regulations of the FGSV and the IT-Ko were imported as feature groups and features. A uniform use of the terms within a set of rules as well as between different sets of rules was investigated. In addition, definitions, descriptions, examples, value ranges, physical quantities and dimensions were assigned to the individual characteristics. The information content in the database is strongly dependent on the level of detail in each set of rules. The results of the analysis and the information on non-harmonized areas of the individual regulations were made available for further committee work and any necessary coordination between different committees. Additional notes on displayable and non-imageable information in digital models were also elaborated. A list of further BIM-relevant rules and regulations as well as expected innovations in already analyzed rules and regulations can be found in this report. A guide for the systematic analysis of other rules and regulations and for adding them to the database for future data maintenance was written. An implementation example of the database in the form of a three-dimensional data model was generated. In the future, checks regarding the dependencies of characteristics can be supplemented by specific queries within a model. By the exemplary analysis of selected rules and regulations and the development of a suitable database structure, this project can serve as a first step towards a uniform BIM structure for infrastructure construction.