

BIM Feasibility Study Verbindungsbahn-Entlastungs- tunnel (VET) Hamburg

In Hamburg, DB Netz AG is planning to build a connecting rail relief tunnel (VET). For this purpose, different route variants were examined in a feasibility study. The entire study was carried out using BIM (Building Information Modeling).

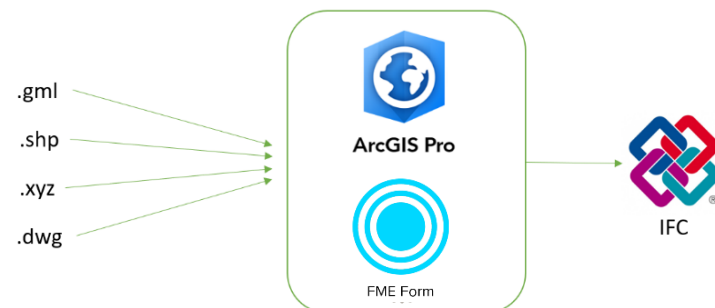
Client	DB Netz AG (today: DB InfraGO AG) via SSF Ingenieure AG
Project Execution	PSU Prof. Schaller UmweltConsult GmbH
Project Period	2021 - 2022
Services	<ul style="list-style-type: none"> ▪ GIS-BIM Integration ▪ Data conversion ▪ Variant assessment ▪ Evaluation matrix
Study Area	Hamburg

Environmental Assessment

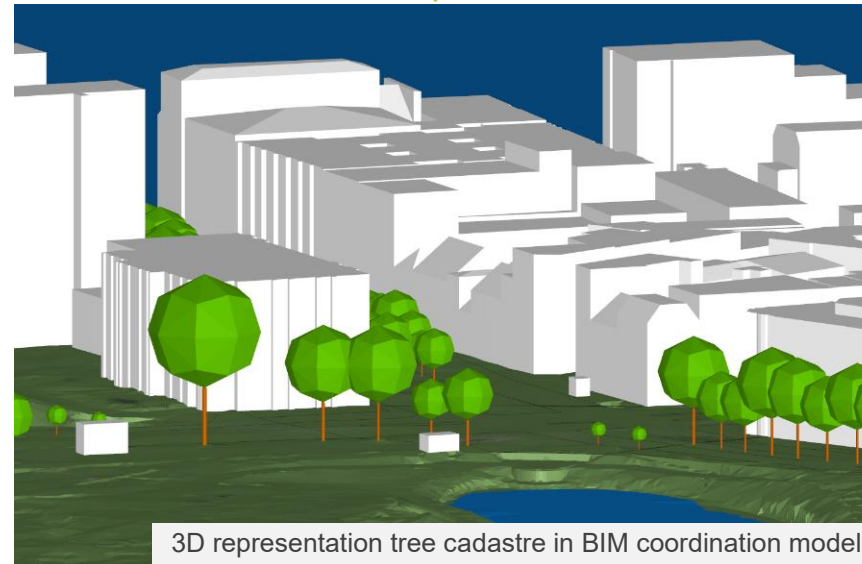
A simplified environmental impact assessment was carried out as part of the feasibility study. The results of this study are to be used to prepare decisions for future, more in-depth planning. For the decision-making process, an evaluation matrix was drawn up in order to be able to compare the individual route variants with each other.

BIM Coordination Model

Accompanying the evaluation matrix, a BIM coordination model was created jointly by all involved, in which all specialist models were brought together. In order to ensure a low-loss exchange, the IFC format was used (a standard from buildingSMART).



The geodata of the environment were available in different formats and had to be converted to IFC format using ArcGIS Pro and FME. The schematic 3D tree objects were generated based on existing attributes (height, crown diameter, trunk diameter).



Each IFC object in the coordination model contains all attributes relevant for the other planners in custom property sets, which can be called up by selecting an object or can be used for filtering.

Surface information (green areas, protected areas, etc.) from the GIS can also be displayed in the BIM coordination model. For this purpose, the surfaces are draped over the surface model and raised slightly to rule out display difficulties.

The attributes from the GIS are also given to the IFC objects as custom property sets. This allows other planners to obtain information about important environmental aspects in the project scope and, if necessary, to adapt the planning accordingly (for example, to exclude sensitive areas such as protected areas).



GIS Data in the BIM Model

The integration of GIS data into the BIM coordination model, as well as working with an open standard such as the IFC format, has many advantages:

- Exchange of knowledge and content between specialist planners is greatly simplified
- Planners are up to date and on the same state of planning
- By integrating environmental planning, sensitive areas can be identified at an early stage and easily communicated to all specialist planners
- Potential environmental conflicts are identified in the early project stage and can thus be better avoided