

# Site Plan for BIM? – A Free and Open Source Plug-In for As-Is Vicinity Models to be Used in Small and Medium-Sized BIM-Projects

Christian Clemen, Tim Kaiser, Enrico Romanschek and Marcus Schröder (Germany)

**Key words:** Digital cadastre; Geoinformation/GI; Standards; BIM; site plan; topography; IFC; GML; CityGML; Revit

## SUMMARY

Building Information Modeling (BIM) is a method of optimized, software-supported planning, execution and management of construction projects, based on the active networking of everyone involved in construction. The virtual 3D model forms the core of the method, but the semantic model (classification, attribution) is the leading perspective and produces the main benefit of BIM.

However, nowadays standard deliveries from land- und engineering surveys, such as detailed terrain model, site plan with topography, parcel map or development plans are seldom syntactically, semantically nor logically linked with the building model or integrated into automated processes of planning, building and maintaining the built environment.

The aim of the research presented in this article is to show practical ways in which a site plan for BIM projects can be created. From the academic authors' point of view, the currently available software is not sufficient for this task. Therefore, several software packages and a plug-in were developed in several research projects by research assistants and with the help of students. The released binaries and source code are free and open source available as a plug-in for Autodesk Revit (application level) and IFC-converter (data level). All presented tools help to deliver standard information deliveries of the surveyor. The delivered model contains the same information as traditional CAD files, but the vicinity model is BIM-ready prepared. Some of IFC-converters might be used for “Extract-Transform-Load” (ETL) processes by advanced user. The main target group are practitioners, which want to work in a general-purpose BIM authoring tool (BAT), e.g. Autodesk Revit. All converters are accessible via a graphical user interface (GUI).

The research results are presented as the functionality of the Revit plug-in. All functionalities start with the georeferencing the BIM-site and the corresponding vicinity model. The next step is the

---

Site Plan for BIM? – A Free and Open Source Plug-In for As-Is Vicinity Models to be Used in Small and Medium-Sized BIM-Projects (11029)

Christian Clemen, Tim Kaiser, Enrico Romanschek and Marcus Schröder (Germany)

FIG e-Working Week 2021

Smart Surveyors for Land and Water Management - Challenges in a New Reality

Virtually in the Netherlands, 21–25 June 2021

Revit import, transformation and IFC-Export to openBIM. The presented software supports the following information types: 2.5D digital terrain models in many data formats; 2D-data that describe site-related rights (e.g. property) and restrictions as GML application schema; 3D-buildings that are in the vicinity of the planned construction and provided with CityGML; additional, detailed measurements that were carried out by a surveyor and modelled in CAD/DXF. The many open points of the current research are briefly discussed in an outlook.

---

Site Plan for BIM? – A Free and Open Source Plug-In for As-Is Vicinity Models to be Used in Small and Medium-Sized BIM-Projects (11029)

Christian Clemen, Tim Kaiser, Enrico Romanschek and Marcus Schröder (Germany)

FIG e-Working Week 2021

Smart Surveyors for Land and Water Management - Challenges in a New Reality

Virtually in the Netherlands, 21–25 June 2021