



FIG Working Week 2024

19-24 May

Accra, Ghana

Your World, Our World:
Resilient Environment
and Sustainable
Resource Management
for All

BIM and GIS - Bidirectional Data Exchange for Renewable Energy Planning

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AGENDA

1. Introduction
2. Project Objective
3. Conclusion
4. Methods

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1. INTRODUCTION

The Problem:

"Imagine trying to build a puzzle where pieces from two different sets don't fit together. That's been the struggle for planners integrating BIM and GIS systems in renewable energy planning."

GIS: encompass entire continents, cities, ...
buildings are represented as surfaces

BIM (AEC): represent detailed specific buildings
with individual components and technical
equipment

→ Difference in approach, scale and data formats

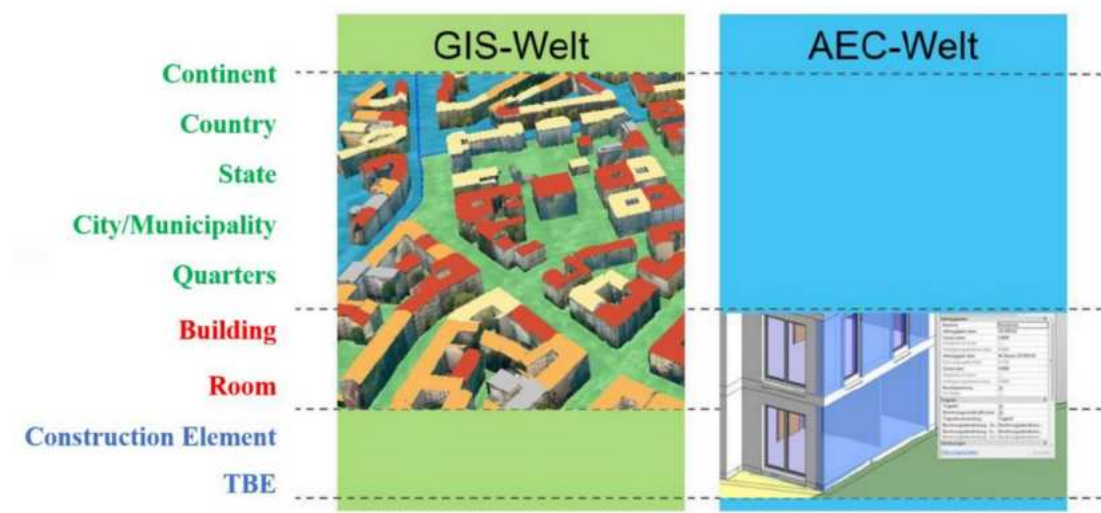




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2. PROJECT OBJECTIVE

Development of a software for an integrated and seamless design, planning and construction process for wind power plants

Linking the BIM authoring software Autodesk Revit with GIS planning software moGI Planner

- Bidirectional interface for exchanging planning data
- Data remains in specialist models



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3. CONCLUSION

Work-in-progress paper

Considerations in paper proves a connection between two (or more) specialist programs (Autodesk Revit and moGI-Planner) is possible

Which approach and technologies can be used to accomplish the given task

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4. METHODS

Multi-Model Idea

Connecting the heterogeneous data spaces BIM and GIS
Required data for planning a wind park is linked together
in a Virtual Database

- Virtual Database doesn't physically exist
- Linked to the original storage location
- Minimized Data loss
- Exchange between BIM and GIS planner via the link model is taking place in real time

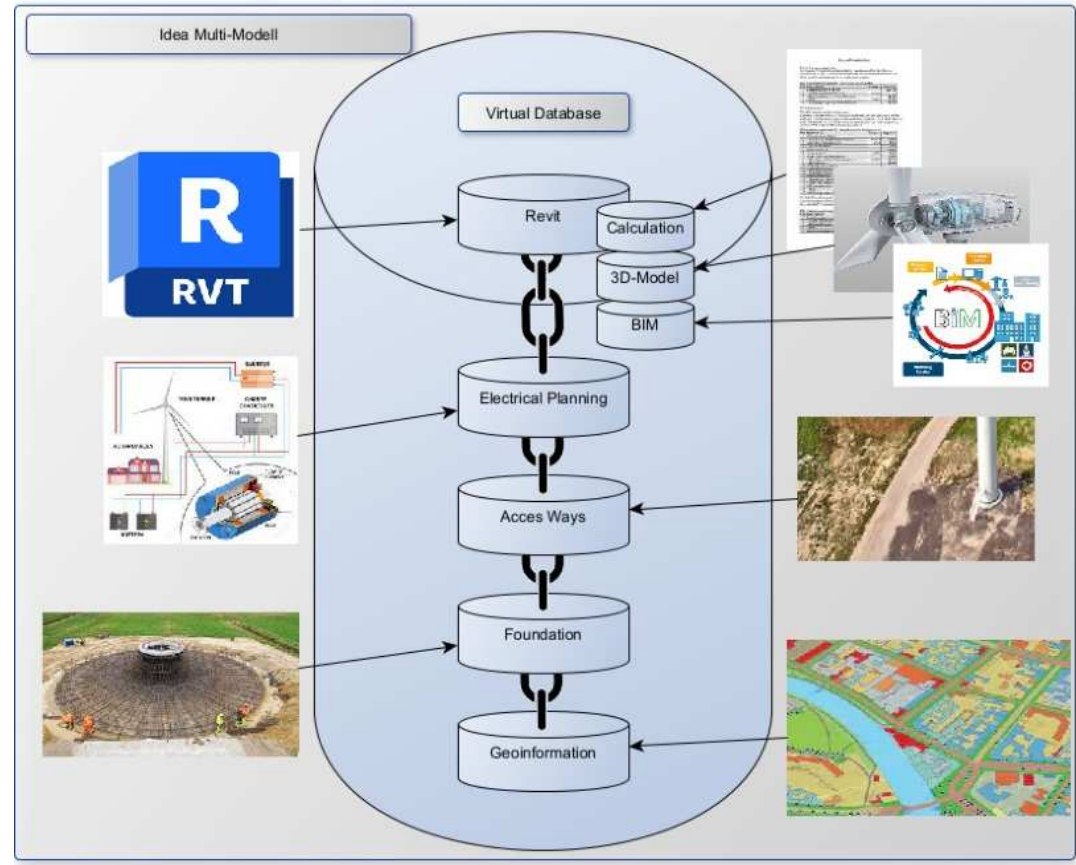




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4. METHODS

How to create the Link Model?

The Information of the 3D-Model is stored in the open source software BIMserver using the Industry Foundation Class data format (IFC)

The BIMserver is not only a repository, but also responsible for the communication between Autodesk Revit and moGI-Planner

Revit sends and receives data from the BIMserver through an API-Plugin

moGI-Planner doesn't support IFC, but data exchange with other systems is realized through the GeoJSON format → GeoJSON file is parsed using Python scripting language and open source libraries

Semantic information and links are stored in RDF triples (Resource Description Framework)

Data distribution within the link model is realized using a container software like Docker Containers

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