Geotechnical Data Standardization for BIM - From MINnD to IDBE Geotech

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Building Information Modeling (BIM) aims at proposing a better management, update and sharing of data regarding a construction during its lifecycle from conception to demolition.

Several software vendors propose solutions to offer their users such capacities. Yet this mostly rely on specific proprietary formats. The data structure is then constrained by those formats, and users can only access their data through the interfaces proposed by one software.

In order to tackle this lack of interoperability, organizations such as building Smart International (bSI) proposed to develop software independent formats for BIM. This initiative called openBIM aims at defining standards to describe the building information and facilitate their exchange. In the meantime, similar initiative was launched in the Geographical Information System (GIS) world, with the creation of the openGIS, supported by the Open Geospatial Consortium (OGC).

In 2014 in France, the MINnD project was launched to extend the capabilities of the existing IFC standards from bSI to deal with infrastructure modelling such as road, highway, railway, etc... One major challenge for enabling openBIM for infrastructure, is to handle the data heterogeneity that can be associated to both the CAD and GIS tools.

The MINnD UC8-GT focused on the description of the environment of an infrastructure, especially tunnels. In a construction project, this mission is endorsed by the geotechnical engineering team. Its objective is to propose a comprehension of the ground and also to help defining solutions to validate or enhance the project sustainability. Members of the geotechnical team collect data on the field and in existing databases, build an interpretation of the subsurface organization and propose representations of it that can be in 3D.

The MINnD UC8-GT team made some proposals for the structuration and the furniture of geotechnical data in interoperable standards. The proposal mostly rely on the reuse and extension of existing data models developed and supported under the umbrella of the OGC (eg. GeoSciML, GroundWaterML2) or recognized by the geotechnical community (AGS).

In addition, several proposals were made to connect CAD and GIS and take advantage of their respective strengths. This lead to the creation of IDBE Geotech, a joint working group between OGC and bSI to commonly define and experiment geotechnical data standards for openBIM and openGIS.

This presentation propose an overview of current activities of those two groups: MINnD Geotechnics and IDBE Geotech.

Useful links:

MINnD official website: http://www.minnd.fr/en/

IDBE Geotech homepage: https://github.com/opengeospatial/IDBE-Geotech

GeoScienceDWG homepage: http://external.opengis.org/twiki_public/GeoScienceDWG/WebHome