Doctoral Thesis Title: Integration of BIM and GIS for Spatial Data Infrastructures based on INSPIRE using a Data Integration tool.

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Abstract:

Building Information Model (BIM) allows you to create digital design simulations, coordinating all the information involved in an architectural project. A Geographic Information System (GIS) can integrate, storing, editing, analyzing, sharing and displaying geographically referenced information. As we can see, both technologies are in a completely different scope and approach, and when integrated they can not only solve problems in the civil sector, construction and infrastructure, but can also serve public entities to have a control of urban areas and territory in general.

Virtual 3D models as a general framework and platform for spatial data allow BIM data to be combined with GIS systems, which could be implemented in a Spatial Data Infrastructure, where any user can search, visualize and download geographic data through worldwide standardized online services.

The Spanish Ministry of Public Works created the BIM Commission in 2015 with the aim of defining the roadmap that will make the use of BIM compulsory for all public tenders, in relation to the transposition of Directive 2014/24/EU.

Bearing in mind that the BIM technology will be necessary and implemented in Spain and that on the other hand the local IDEs will base their data on the INSPIRE regulation (Law 14/2010). This thesis aims to propose a model based on the INSPIRE model to integrate BIM and GIS technologies and offer this information through an SDI. This will begin by analyzing the data models oriented towards infrastructures by INSPIRE regulations, and then design a model that integrates the BIM and GIS methodology.

Once we have a model that allows us to integrate BIM and GIS and that can be implemented in an IDE, we will look for data integration tools that can maintain geometric information as the attributive of both technologies. Having a model of integration of BIM and GIS can expand the scope of the GIS, for example, using BIM can show infrastructure information that can help prevent risks and better plan, and with a GIS can better manage external data such as light, terrain and temperature. Both technologies are important for sustainable construction.

Therefore, the main objectives of the thesis will be to design a data model based on the INSPIRE standard that can integrate BIM and GIS technologies, to elaborate an extended GIS, and finally to make possible the access to this information through services of an IDE.

Available Means:

Computer equipment, applications and servers of UPV. Also, Access and utilization of services of the Engineering Department on Cartographic, Geodesy and Photogrammetry.

References:

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