

Investigating the Merging of BIM and Land Use Geospatial Data with 2D Cadastral Information. A Case Study for a Municipality in Greece.

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SUMMARY

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ABSTRACT

Rapid urbanization and constant changes of populace as well as rapid shifts regarding living standards contribute to the creation of increasingly dense city structures. Property rights become multidimensional resulting in an overlap of the spatial representations of the legal arrangements assigned to the property units, while construction keeps expanding into developing more multifunctional and complex buildings both above and below the ground surface, almost in all big cities. 2D cadastral information are in dire need for merging with newly created, for various purposes, 3d geospatial information to support the good functioning of large urban areas. The main objective of this paper is to investigate easy and low-cost ways for merging BIM technology with both legal and other semantic 3D urban information, in a homogenous public digital platform, using open geospatial data, such as 2D cadastral and city plans, as a basemap. A case study is presented, in a volumetric format, for a city section of Kaisariani Municipality, Attika, Greece. In the recent decades, the housing type has been shifted from one level structures to multi – story buildings. The 3D representation covers a variety of urban blocks, the entailing buildings and road networks in a consecutive BIM. The BIM includes also the region's zoning and construction regulations in the form of 3D surfaces and volumes, respectively. The buildings, in the area under study, are characterized by different construction types and a variety of applied land uses. The proposal combines the volumetric and realistic modelling of buildings, roads, blocks and regulations with

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conceptual data such as land use and values, building age and type. The above-mentioned geospatial data are merged in a public platform with the national 2D cadastral and urban plans. In the platform, additional 3D crowdsourced spatial urban data are modelled. The platform is in public disposal, in hope of continuously enriching it with further information using crowdsourced methodology. The significance of this proposal lies in the combination of 2D cadastral basemap with land use information and 3D BIM and other spatial data, in a public platform aiming to create a digital twin of the urban section. The research aims to assess the above mentioned proposal, and its potential to serve as a helpful and smart, urban planning tool.

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