TOWARDS INTEROPERATING CITYGML AND IFC BUILDING MODELS: A UNIFIED MODEL BASED APPROACH

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ABSTRACT:

CityGML represents 3D urban objects that can be shared over different applications, whereas, IFC provides a very detailed semantic model for 3D building representations using constructive elements like beams, walls, etc. Attempts have been made to interoperate CityGML and IFC for seeking useful common applications. However, these efforts use a unidirectional method (mostly from IFC to CityGML) for conversion processes. A bidirectional method can lead to development of unified applications in the areas of urban planning, building construction analysis, homeland security, etc. The benefits of these applications clearly appear at the operational level (e.g., cost reduction, unified data-view), and at the strategic level (e.g., crisis management and increasing the analyses capabilities). In this paper, we present an approach for interoperating CityGML and IFC based on development of a unified building model for converting IFC to CityGML and vice versa. The conversion is a two-steps process in which a model is firstly converted to the unified model and secondly to the target model. Finally, we demonstrate the approach and outcome of each step by a hospital building case that is located in Norrtälje City, north of Stockholm, Sweden.