INITIAL INVESTIGATIONS FOR MODELING INTERIOR UTILITIES WITHIN 3D GEO CONTEXT: TRANSFORMING IFC- INTERIOR UTILITY TO CITYGML/UTILITYNETWORKADE

Ihab Hijazi[1], Manfred Ehlers[1], Sisi Zlatanova[2], Thomas Becker[3], Léon van Berlo[4]

[1]Institute for Geoinformatics and Remote Sensing – IGF, University of Osnabrueck, Osnabrueck, Germany
{ihijazi, mehlers}@igf.uos.de
[2]OTB, [2]Research Institute for Housing, Urban and Mobility Studies Delft University of Technology
Delft, The Netherlands. s.zlatanova@tudelft.nl
[3]Institute for Geodesy and Geoinformation Science, Technische Universität Berlin, Berlin, Germany
thomas.becker@tu-berlin.de
[4]Netherlands organisation for applied scientific research (TNO), Netherlands, leon.vanberlo@tno.nl

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ABSTRACT:

3D City models have so far neglected utility networks in built environments, both interior and exterior. Many urban applications, e.g. emergency response or maintenance operations, are looking for such an integration of interior and exterior utility. Interior utility is usually created and maintained using Building Information Model (BIM) systems, while exterior utility is stored, managed and analyzed using GIS. Researchers have suggested that the best approach for BIM/GIS integration is harmonized semantics, which allow formal mapping between the BIM and real world GIS. This paper provides preliminary ideas and directions for how to acquire information from BIM/Industry Foundation Class (IFC) and map it to CityGML utility network Application Domain Extension (ADE). The investigation points out that, in most cases, there is a direct one-to-one mapping between IFC schema and UtilityNetworkADE schema, and only in one case there is one-to-many mapping; related to logical connectivity since there is no exact concept to represent the case in UtilityNetworkADE. Many examples are shown of partial IFC files and their possible translation in order to be represented in UtilityNetworkADE classes.

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