Future City Pilot 1 Engineering Report

Abstract:
The Future City Pilot Phase 1 (FCP1) is an OGC Interoperability Program initiative in collaboration with buildingSMART International (bSI). The pilot aimed at demonstrating and enhancing the ability of spatial data infrastructures to support quality of life, civic initiatives, and urban resilience. During the pilot, multiple scenarios were set up based on real-world requirements and were put forward by the pilot sponsors: Sant Cugat del Vallès (Barcelona, Spain), Ordnance Survey Great Britain (UK), virtualcitySYSTEMS GmbH (Germany), and Institut National de l’Information Géographique et Forestière - IGN (France). The scenarios were focused on (i) the interoperability between the two international standards: Industry Foundation Classes (IFC) and CityGML; (ii) city flood modeling; and (iii) supporting real-time sensor readings and other time-dependent properties within semantic 3D city models. The solutions for the respective scenarios were developed by the pilot participants: University of Melbourne (Australia), Remote Sensing Solutions, Inc. (U.S.A), and Technical University of Munich (Germany). This Engineering Report (ER) focuses on the third scenario requiring the
support of real-time sensors and other time-dependent properties within semantic 3D city models based on the CityGML standard. It highlights a new concept 'Dynamizer', which allows representation of highly dynamic data in different and generic ways and providing a method for injecting dynamic variations of city object properties into the static representations. It also establishes explicit links between sensor/observation data and the respective properties of city model objects that are measured by them. The Dynamizer concept has been implemented as an Application Domain Extension (ADE) of the CityGML standard. This implementation allows to use new dynamizer features with the current version of the CityGML standard (CityGML 2.0). The advantage with this approach is that it allows for selected properties of city models to become dynamic without changing the original CityGML data model. If an application does not support dynamic data, it simply does not allow/include these special types of features. The details and results of the pilot are mentioned in the following YouTube video: https://youtu.be/aSQFIPwf2oM

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GISPro_MCS; GISPro_SSD; GISPro_CityGML; GIntop_Standardization; 
GISTop_CitySystemModeling; GISTop_CityModeling; GISTop_3D4D_Managmmt_Viz; LOCenter; 
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