Abstract:

Three-dimensional semantic city models are increasingly used for the analysis of large urban areas. Until now the focus has mostly been on buildings. Nonetheless many applications could also benefit from detailed models of public street space for further analysis. However, there are only few guidelines for representing roads within city models. Therefore, related standards dealing with street modelling are examined and discussed. Nearly all street representations are based on linear abstractions. However, there are many use cases that require or would benefit from the detailed geometrical and semantic representation of street space. A variety of potential applications for detailed street space models are presented. Subsequently, based on related standards as well as on user requirements, a concept for a CityGML-compliant representation of street space in multiple levels of detail is developed. In the course of this process, the CityGML Transportation model of the currently valid OGC standard CityGML2.0 is examined to discover possibilities for further developments. Moreover, a number of improvements are presented. Finally, based on open
data sources, the proposed concept is implemented within a semantic 3D city model of New York City generating a detailed 3D street space model for the entire city. As a result, 11 thematic classes, such as roadbeds, sidewalks or traffic islands are generated and enriched with a large number of thematic attributes.

**Stichworte:**
GISPro_CityGML; GISPro_NYC; GISPro_3DCityDB; GISTop_CityModeling; LOCenter;
LOCTop_Data_generation_and_object_reconstruction;
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