Abstract:

Virtual 3D city models provide important information for different aspects of disaster management. In order to ensure the unambiguous interpretation of the represented objects, an ontology in the sense of a common information model for urban and regional structures has to be defined. Furthermore, up-to-dateness of and flexible access to 3D city models are of utmost importance. Spatial Data Infrastructures (SDI) provide the appropriate framework to cover this aspect, integrating distributed data sources on demand. In this chapter we present CityGML, which is in the first place an ontology for the three-dimensional, multi-purpose, and multi-scale representation of cities, sites, and regions. The implementation of CityGML is based on the standard GML3 of the Open Geospatial Consortium and thus defines an exchange format for the storage of and interoperable access to 3D city models in SDIs. The class taxonomy distinguishes between buildings and other man-made artifacts, vegetation objects, water bodies, and transportation facilities like streets and railways. Spatial as well as semantic properties are structured in five consecutive levels of detail. Throughout this chapter, special focus is on the utilization of model concepts with respect to different...
tasks in the context of emergency response.