Making interoperability persistent: A 3D geo database based on CityGML

Virtual 3D city models are becoming increasingly complex with respect to their spatial and thematic structures. CityGML is an OGC standard to represent and exchange city models in an interoperable way. As CityGML datasets may become very large and may contain deeply structured objects, the efficient storage and input/output of CityGML data requires both carefully optimized database schemas and data access tools. In this paper a 3D geo database for CityGML is presented. It is shown how the CityGML application schema is mapped to a relational schema in an optimized way. Then, a concept for the parallelized handling of (City)GML files using multithreading and the implementation of an import and export tool is explained in detail. Finally, the results from a first performance evaluation are given.