3D City Database
The CityGML Database

New Release 3.3

CityGML

What is the 3D City Database?

The 3D City Database (3DCityDB) is an Open Source software suite featuring solutions for the efficient storage, management and visualization of CityGML based 3D city models. The package defines a relational schema for CityGML for the spatially-enabled relational database management systems Oracle Spatial and PostGIS.

The 3DCityDB is also shipped with Java based client applications for the import and export of CityGML datasets of any size, the generation of visualization models in KML, COLLADA and gITF as well as for data export into simple table structures such as Microsoft Excel and Google Spreadsheets. Many cities around the world and almost all state mapping agencies in Germany are relying on the 3DCityDB. The bundle is freely available for download at www.3dcitydb.org.

New features in release 3.3

The new version 3.3 supports the visualization and interactive query of 3D city models of any size in standard browsers such as Mozilla Firefox, Google Chrome and Apple Safari without the need for additional plugins. It is shipped with a dedicated web client based on the Cesium WebGL Virtual Globe that allows the display of tiled 3D models in gITF format. The web client also runs on mobile Android and iOS devices (smart phones and tablets).

Ever since version 3.0, the 3DCityDB supports both CityGML 2.0 and 1.0. It also features an OGC compliant Web Feature Service 2.0 for web based queries of objects in CityGML format. With version 3.3, the 3DCityDB licensing has been migrated from the Lesser GNU Public License to the Apache 2.0 License.

Google Earth
CESIUM

Key database features

- *Semantically and hierarchically structured data model based on CityGML*
- *Support for CityGML 2.0 and 1.0*
- *Support for all 5 CityGML LoDs*
- *Support for generic and prototypical objects*
- *Management of textures and terrain models*
- *Extensive and fully revised documentation*

Key tool features

- *Reading and writing of CityGML files of any size and including textures and XLinks*
- *Runs on Windows, Linux, and MacOS X*
- *KML/COLLADA/gITF exporter with various display options and automatic tiling for Google Earth and Cesium (WebGL)*
- *Dedicated Cesium based 3D web client for the visualization of city models of any size in standard web browsers*
- *Attribute data display in configurable information balloons*
- *Batch mode for imports and exports*
- *Export of additional thematic data into spreadsheets*
- *Support for coordinate transformations*
- *WFS 2.0.0 (Simple WFS Profile)*

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Application examples

3D city model of Berlin

The official 3D city model of Berlin, Germany has been a significant driver of and test case for the development of the 3DCityDB since 2005. It totals 560.000 textured building models in LoD2 and includes over 200 detailed models in LoD3/4, all managed and maintained with the 3DCityDB. That makes this dataset one of the most extensive CityGML based 3D city models worldwide. The model is available as Open Data.

Live application: bit.ly/3dberlin

Nationwide 3D building model

The official national 3D building model of the Federal Republic of Germany (LoD-DE) currently includes approximately 51 million LoD1 objects. It is, as such, a complete 3D representation based on the building footprints of all federal land cadastres. The nationwide distribution of the data is organized through the "Zentrale Stelle Hauskoordinaten und Hausumringe" (ZSHH). Data management and distribution are both realized based on the 3DCityDB. The inclusion of LoD2 is work in progress.
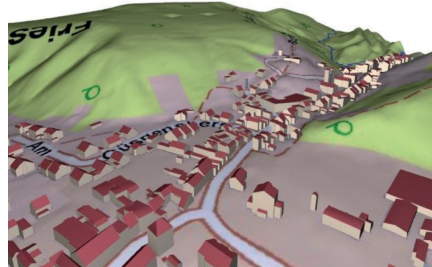

Source: District government of Cologne, department GeoBasis NRW

Smart Cities

Virtual 3D city models and CityGML play a central role in smart city initiatives that aim to connect information on energy, mobility, and facility management. The 3DCityDB is used in the EU project "Smart Sustainable Districts" (SSD) in order to represent objects such as buildings, streets, water bodies and trees in the cities of Berlin, London, Paris and Utrecht among others. These objects are linked with sensor data and BIM models for various application scenarios.

Link: bit.ly/tum-sddi
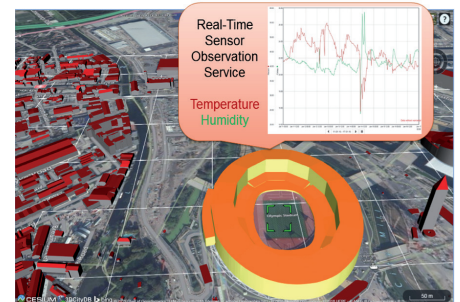
Source: Chair for Geoinformatics, TU Munich

Project team

The 3DCityDB was originally developed in the context of research activities at the Technical University of Munich, the Technical University of Berlin and the University of Bonn under the supervision of Professor Dr. Thomas H. Kolbe.

The 3DCityDB has proven to be reliable in practice and is in widespread commercial and scientific use.

Almost all German surveying authorities and many major cities in Europe, the Middle East, and Asia use the 3DCityDB

to manage their data. That is why in 2013 the Technical University of Munich (represented by Prof. Kolbe), M.O.S.S Computer Grafik Systeme GmbH and virtualcitySYSTEMS GmbH have signed a cooperation agreement aiming at the continued development of the Open Source database solution with due regard to the scientific and commercial interests.

The joint development is coordinated through a steering committee. If you as a user or interested party have specific

wishes or ideas, please send them to the specified contact address. Alternatively, you may want to register with the developer platform to submit feature requests and bug reports.

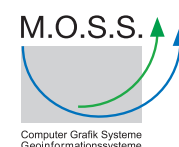3DCityDB Steering committee
3dcitydb@tum.de

The 3DCityDB development platform is accessible from www.3dcitydb.org.

Technische Universität München

virtualcitySYSTEMS

M.O.S.S.
Computer Grafik Systeme
Geoinformationssysteme