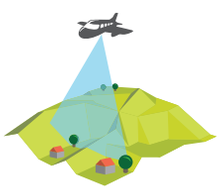
virtualcitySYSTEMS

Update your city models

virtualcityDATABASE

The number of 3D city models is increasing world wide. They are more and more regarded as an integral part of official geodata for which timeliness of data is considered as an essential part of data quality. Keep your city model up-tp-date by using the smart interfaces of the virtualcityDATABASE, which perform updates automatically.

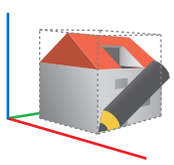


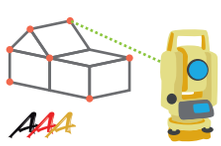
Periodic update

- New aquisition
- Change detection between data of former flights
- Pointcloud classification
- Automatic reconstruction

Project-based update

- Modelling of details
- Amendments
- Subsequent texturing





Update on a daily basis

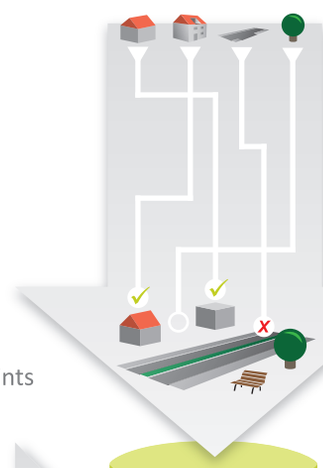
- Linked to cadastre system
- Pre-defined updates
- Surveying of significant points
- Automatic reconstruction

ALKIS continuation

- Insert object
- Replace object
- Delete object

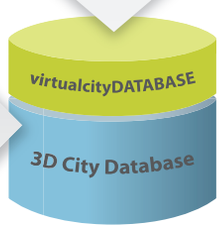
WFS 2.0

CityGML



IntegratePlugin

- Add LoD
- Replace LoD
- No integration for mismatches
- Import object if it does not exist, yet



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- Versioning
- Planning alternatives
- Enrich data

The cityscape is evolving constantly. However, most 3D city models are static and represent only a certain point in time. This will change in the future.

Our customers are already using workflows for data updates on a cyclical up to a daily basis (see figure). For this purpose, they are using tools and interfaces of the virtualcityDATABASE, an extension to the open source project 3D City Database (3dcitydb.org).

Model consistency

Before each integration incoming city objects are checked for existing candidates in the database. An configurable amount of spatial overlap is the crucial factor to identify matching pairs. While performing this check erroneous data can be filtered in advance before ending up in the production state.

If update processes are directly linked to a GIS, data consistency can be ensured. Thus, the different update cases in a city have only to be reflected in the database.

We have developed a workflow that parses the different update scenarios of the german national ALKIS system automatically and integrates them into the database by using an transactional WFS. The software can also reconstruct new buildings out of a few surveyed points.

Make changes visible

How has a city model changed over years? This is an exciting question that the virtualcityDATABASE can answer. Our version management solution tracks all changes and allows for querying the history of an object.

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Key features virtualcityDATABASE

- ***Full support for CityGML version 1.0 and 2.0***
- ***Schema validation of CityGML instance documents***
- ***Fast integration of CityGML-based city models of arbitrary size***
- ***Integration of textures without geometry***
- ***Export to CityGML, KML/COLLADA und B3DM (Cesium Globe)***
- ***ISO/OGC-compliant WFS 2.0 interface***
  - Support of transactions
  - Thematic and spatial filters
  - Delivery of textures via REST service
- ***Maintenance of planning alternatives***
- ***Automatic versioning***
  - Different temporal states for each object
  - Partial updates of web maps
- ***Visual control of data consistency issues***
  - How good do different LoDs match with each other?
  - Meta data on data quality is stored in the database
- ***Server-side programming APIs to support the data management:***
  - Deletion of objects and single LoDs
  - Geometry checks against single LoDs
  - Coloring of objects
  - Calculation of 3D bounding box and 2D footprint
- ***Advantages by using Oracle / PostgreSQL:***
  - High data consistency and fail safety
  - Concurrent access of multiple users
  - Simple enrichment of additional attributes
  - Reliable base technology

System requirements

- ***Supported spatial databases:***
  - Oracle Spatial / Locator from 11g
  - PostgreSQL from 9.1 with PostGIS from 2.0
- ***CityGML Importer/Exporter + Plugins***
  - JRE 1.7+
- ***virtualcityDATABASE Web Feature Service***
  - Java Servlet Container (e.g. Tomcat 7+)
  - JRE 1.7+

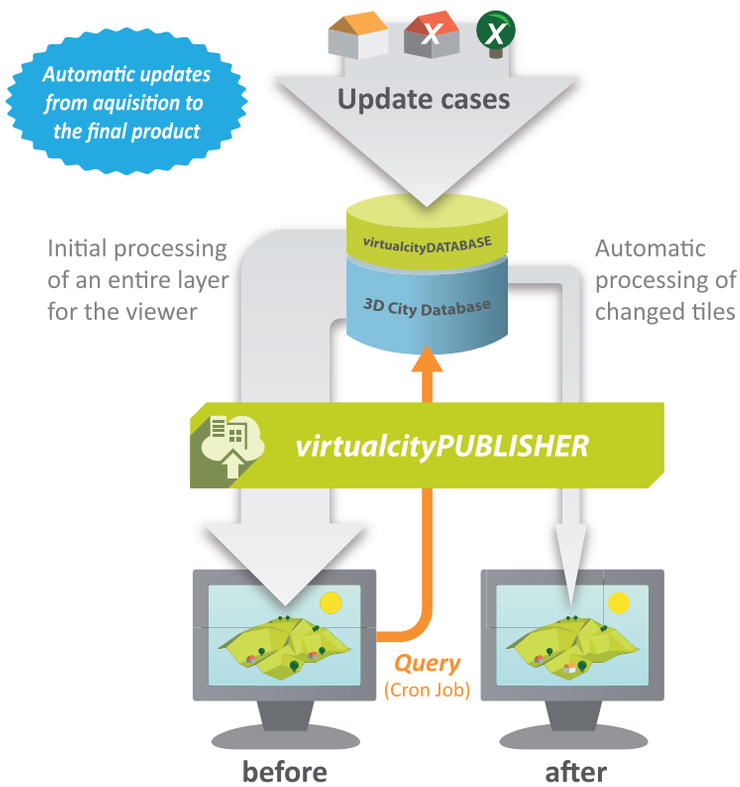
Open Source

We are a core developer of the open source project 3D City Database on which the virtualcityDATABASE is based of. If you have got questions, proposals for improvement or pull requests to the source code, please contact us using the GitHub repository (github.com/3dcitydb).

We offer individual training seminars in english to teach you the structure of the database schema and how to use the different interfaces.

Partial updates of web maps

The update process is not finished until available web maps represent the recent state of the city model. Our web viewer backend - the virtualcityPUBLISHER - queries the database for changes automatically an re-processes only tiles that contain changed objects and not the entire scene.



"The CityGML standard and the 3D City Database environment have proved flexibility and convenient usage"
(EIFER, Germany)

Want to learn more?

Visit our website at ***www.virtualcitysystems.de/en***
and follow us on our social media channels

virtualcitySYSTEMS GmbH
Tauentzienstraße 7 b/c
10789 Berlin

Tel +49 (0)30/890 4871-10
Fax +49 (0)30/890 4871-19
E-Mail info@virtualcitySYSTEMS.de