

OSM Inspector reloaded



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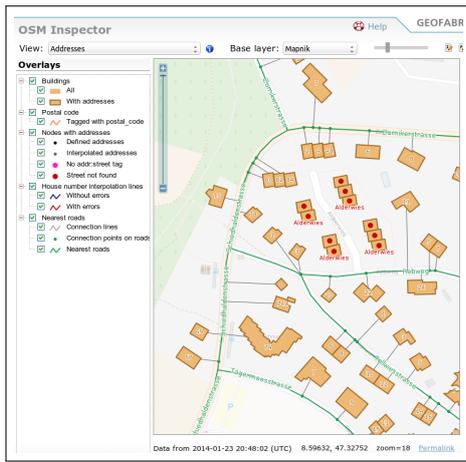


Figure 1: Screenshot of the OSM Inspector's user interface

OpenStreetMap is a collaboratively maintained geodatabase. Its content is edited by an open community, similar to Wikipedia. Roads, buildings and postal addresses can be entered among other features.

Currently, the database and available editors provide very limited possibilities to easily detect erratic address entries such as typing errors. To mitigate this situation, the german OSM consulting company Geofabrik GmbH created a tool called "OSM Inspector", which lets mappers see potential errors in postal address data and other categories as well. One of its unique features is the ability to match and visualize postal addresses to their belonging streets by so-called *connection lines* (see Figure 1). The process of computing the necessary data proved to be complex and time-consuming: Parts of the planet file are loaded into a local PostGIS database to be processed, exported, loaded into another remote PostGIS database and be displayed using UMN MapServer (see Figure 2 left).

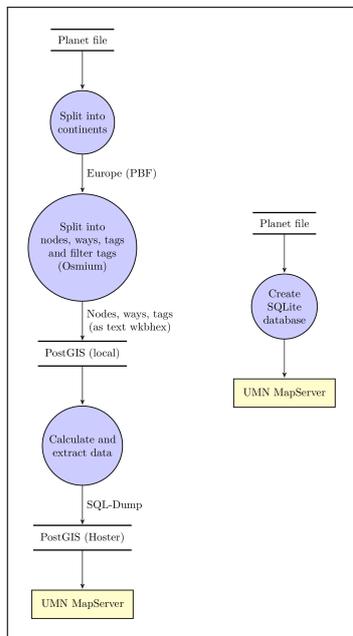


Figure 2: Data flow diagram for the current (left) and new implementation (right)

Specific goals addressed in this project thesis are a substantial reduction of execution time to do calculations on a global scale and conversion to an object-oriented architecture to provide a basis for future development. Thus, software which simplifies this process by directly converting OSM files to SQLite output processible by the UMN MapServer is presented (see Figure 2 right). Challenges stemmed from the need of holding data from the world-wide set of streets and making them available for rapid calculation of connection lines for every addressed object in the OpenStreetMap database. These were addressed by indexing techniques involving names and approximate positions of streets. It was possible to improve the execution speed by a factor of five.

The software is written in C++11 and uses libosmium to read OSM files and GDAL/OGR to write SQLite output.