

Database Transformation, Cadastre Data Processing in QGIS and Implementation in Web GIS

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SUMMARY

On a judicial basis of § 196 Baugesetzbuch (BauGB, 2018) every municipality in the Republic of Germany must publish standard land values in €/m² for the whole district area in a biennial cycle. The standard land values have to be derived comprehensively for different land use within a district. These are mainly residential areas, mixed-use zones (residential and commercial areas), industrial areas, cropland, grassland and forestry. The standard land values serve the taxation authorities to rate the hereditary real estate and also will play a major role for the future property tax (Löhr, 2018). With the help of Geographic Information Systems (GIS) all the necessary data for the derivation of the standard land values could be analyzed. This data consists of cadastral information (ALKIS) (AdV, 2005) for each municipality district like streets, buildings, land parcels, areas of application for special building law as well as geocoded data (Bill, 2016) about purchasing prices within the district real estate transactions.

According to the INSPIRE (Infrastructure for Spatial Information in Europe) directive (European Parliament, 2007) which aims to create a European spatial data infrastructure for a transparent common environmental policy the geodata representing the standard land values will be provided in the Web with services to query, visualize and download the datasets. The following work contributes to both requirements, the statutory determination of the standard land values answering the lawful necessity and the setting up of the generated geodata in the Web according to the demanded transparency of the INSPIRE directive.

This thesis describes the development of automatizing the process of implementing, selecting, aggregating and layouting the relevant objects of the ALKIS data in an Open Source GIS (QGIS) via Python language. The standard land values will be visualized and presented in Web GIS (Seip et al, 2017). Therefore three different Web Clients will be compared according to performance and

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editing capabilities: QGIS Web Client (Open Source), Lizmap (Open Source) and ArcGIS Online (commercial). Additionally the two different Web GIS server solutions, QGIS Server and ArcGIS Online, will be described and evaluated.

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