Optimizing and Simplifying the Process of Energy Efficiency Estimation for Urban Redevelopment Areas by Using Open Source Gis Solutions

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SUMMARY

In recent years, neighborhood energy-efficiency concepts and implementation management have become more important in improving urban redevelopment projects in terms of cost-effectiveness and protecting environment and human health. Recently, considering the energy consumption and energy simulation are the mandatory and preliminary factors before starting an urban planning project. One of the main target of this paper is how to calculate the energy consumption in the easiest way with the appropriate accuracy in a short period of time without huge programming background and with license free software that are known for surveyors, architectures, city planners and geographers. Our work represents how the usage of the open source GIS software can be implemented for energy demand calculation and as result for a map visualization. At first, the necessary data, geometry and relational tables, which are mostly related to building information such as number of floors, windows, building age and etc., must be defined as a schema in PostgreSQL database. Secondly, for data acquisition, QField software which is the open source plugin in quantum geographic information (QGIS) system will be used. In the last phase of the project, those captured data will be synchronized from QField in QGIS software and spontaneously in PostgreSQL database. In addition, some important information from LOD2 (level of detail) data with XML format which contains standardized of roof type and height of building can be added for accuracy determination of result.
