



The use of geospatial web services for exchanging utilities data

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Geographic information technologies and related geo-information systems currently play an important role in the management of public administration in Poland. One of these tasks is to maintain and update Geodetic Evidence of Public Utilities (GESUT), part of the National Geodetic and Cartographic Resource, which contains an important part for many institutions information of technical infrastructure. It requires an active exchange of data between the Geodesy and Cartography Documentation Centers and institutions, which administrate transmission lines. The administrator of public utilities, is legally obliged to provide information about utilities to GESUT.

The aim of the research work was to develop a universal data exchange methodology, which can be implemented on a variety of hardware and software platforms. This methodology use Unified Modeling Language (UML), eXtensible Markup Language (XML), and Geography Markup Language (GML). The proposed methodology is based on the two different strategies: Model Driven Architecture (MDA) and Service Oriented Architecture (SOA). Used solutions are consistent with the INSPIRE Directive and ISO 19100 series standards for geographic information.

On the basis of analysis of the input data structures, conceptual models were built for both databases. Models were written in the universal modeling language: UML. Combined model that defines a common data structure was also built. This model was transformed into developed for the exchange of geographic information GML standard. The structure of the document describing the data that may be exchanged is defined in the .xsd file. Network services were selected and implemented in the system designed for data exchange based on open source tools.

Methodology was implemented and tested. Data in the agreed data structure and metadata were set up on the server. Data access was provided by geospatial network services: data searching possibilities by Catalog Service for the Web (CSW), data collection by Web Feature Service (WFS). WFS provides also operation for modification data, for example to update them by utility administrator.

The proposed solution significantly increases the efficiency of data exchange and facilitates maintenance the National Geodetic and Cartographic Resource.