A STUDY OF WEB SEMANTIC TECHNOLOGIES FOR GIS

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Abstract

Geographic Information Systems (GIS) are designed to capture, store, manipulate, analyze, manage, represent and search geographic information. Today, they are an effective foundation for digital maps, planning applications and localization services. GIS integrate a number of technologies, such as relational databases that allow searching for geographic data, advanced visualization components, etc. These systems have to address a number of specific problems, including: efficient representation of geographic data allowing for optimal storage, search and presentation, real time visualization, integration with other applications using GIS as data repository, e.g. mapping services. An important improvement in the development of these systems was the introduction of Web-based GIS (or WebGIS). A flexible Web-based interface allows for an easy access for number of parallel clients. On the client side it requires only a simple web browser (optionally equipped with selected presentation plugins). The server side processing requires important amounts of storage and computing power. Such a Web-based client-server architecture proved to be an effective tool for making GIS both popular and useful for non-technical users. Technologies such as formal metadata descriptions with RDF, and formal ontologies in RDFS and OWL allow for implementing enhanced search and classification features in GIS. Semantic Web identifies a set of technologies, tools and standards which form the basic building blocks of a system that could support the vision of a Web imbued with meaning. The Semantic Web has developed a layered architecture, where tools and technologies provide flexible knowledge representation and processing based on a machine-readable XML format, formally structured with XSD. The next step in the evolution of GIS is the integration of semantic technologies developed within the W3C Semantic Web initiative. Using this representation reasoning with rules is possible with the use of SWRL. In this paper is described the way web semantic interacts with GIS, also is discussed about the aspects of using Semantic Web technologies for representing GIS data.

Keywords: *GIS, web semantic, OWL, RDF, client-server, XSD.*