

Semantic Linking Spatial RDF Data to The Web Data Sources

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Key words: Cartography; Geoinformation/GI; Standards; Linked Data; Web Data Sources; Spatial Data; Ontology

SUMMARY

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Large amounts of spatial data are hold in relational databases. Spatial data is an important key factor for creating spatial RDF data. Linked Data is a way to publish and share data on the Web. In order to define the semantics of the data, links are provided to vocabularies (ontologies or other external web resources) that are common conceptualizations for a domain. Linking data of resource vocabulary with globally published concepts of domain resources combines different data sources and datasets, makes data more understandable, discoverable and usable, improves data interoperability and integration, provides automatic reasoning and prevents data duplication. The need to convert relational data to RDF is coming in sight due to semantic expressiveness of Semantic Web Technologies.

One of the important key factors of Semantic Web is ontologies. The semantics of spatial data relies on ontologies. Linking of spatial data from relational databases to the web data sources is not an easy task. Objective of this study is to research existing approaches, conversion tools and web data sources for relational data conversion to the spatial RDF. In this paper, we have investigated current state of spatial RDF data, standards, open source platforms (particularly D2RQ, GeoTriples, Ontop, etc.) and the Web Data Sources. Moreover, the process of spatial data conversion to the RDF and how to link it to the web data sources is described. The implementation of linking spatial RDF data to the web data sources is demonstrated with an example use case. We have linked road data to the related popular web data sources such as DBPedia, GeoNames and etc. As a result, linked road data is shared and represented as an information resource on the web and enriched with definitions of related different resources. By this way, road datasets are also linked by the related classes, individuals, spatial relations and properties they cover such as construction date, road length, coordinates, etc.