

**Integrating SDI and Linked Open Data:
A Case Study Using Administrative Boundaries
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ABSTRACT: The view of the web as a unified and interconnected knowledge database enables a series of applications with an important role for geoinformation. The knowledge about the territory arises in this scenario as a strong integration component from several data sources. Additionally, governments, as major producers of essential information, are increasingly required to publish data in an open, transparent and machine-readable way. In this context, we can observe the establishment of linked open data structures and open data portals.

Since the 1990s, the geospatial community has been making efforts towards interoperability, developing standards to overcome obstacles of syntactic and semantic conflicts. These efforts culminated with the creation of Spatial Data Infrastructures (SDIs), in which standards, policies, technology and capacity building are coordinated in pursuit of improving the sharing and use of geospatial information. The SDIs are evolving from the more top-down and data focused initiatives, for new approaches considering more participation of the users. The challenge is to design a new generation of SDIs integrated with other web data sources, such as Volunteered Geographic Information (VGI), in user-friendly applications. Integrate data published in SDI with linked open data using RDF format can help to achieve this goal and make geographical information less isolated in specialized silos, but available for a boarder range of users.

However, data published in the Spatial Data Infrastructure through OGC standardized web services cannot be accessed directly in the resource-oriented linked open data format. This requires a range of actions that include the creation and maintenance of ontologies, new semantic query mechanisms and integration from traditional SDI services with the linked open data format.

In this work, this integration has been demonstrated through a use case, defining ontologies for the Brazilian political-administrative division and the development of a mediator web service that transforms data directly from WFS and GML in the RDF format. This architecture allowed to demonstrate the use of GEOSPARQL standard to search simultaneously databases from Brazilian NSDI and RDF databases. The aim of this study is to show that using the existent structures the SDI concept can be expanded to reach the new areas using open data integration.

KEYWORDS: SDI, Linked open data, Integration, Ontologies

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