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Relationships in semantic data cubes

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Linked data is a method for publishing structured data in a way that also expresses its semantics. This semantic description is implemented by the use of vocabularies, which are usually specified by the W3C as web standards. However, anyone can create and register their vocabulary and register it in an open catalogue like LOV.

There are many situations where it would be useful to be able to publish multi-dimensional data, such as statistics, on the web in such a way that it can be linked to related data sets and concepts. The Data Cube vocabulary provides a means to do this using the W3C RDF (Resource Description Framework) standard. The model underpinning the Data Cube vocabulary is compatible with the cube model that underlies SDMX (Statistical Data and Metadata eXchange), an ISO standard for exchanging and sharing statistical data and metadata among organizations [1].

Given the dispersed nature of linked data, we want to infer relationships between Linked Open Data datasets based on their semantic description. In particular we are interested in geospatial relationships.

We show a generic approach for relationships in semantic data cubes using the same taxonomies, related dimensions, as well as through structured geographical datasets. Good results were achieved using structural geographical ontologies in combination with the generic approach for taxonomies.

[1] Cyganiak, Reynolds, Tennison: The RDF Data Cube Vocabulary, W3C Recommendation, 16 January 2014,