The GeoKnow Project

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Project Overview

Geoknow[1] is an EU-funded, three-year project that started in December 2012. While several research projects, such as LOD2,[2] support the Linked Data Life-cycle (see [1] and Figure 1), Geoknow addresses the key issues of integrating geographically related information on the Web, scalable integration over millions of geo-spatial entities within the Linked Data Web, as well as efficient browsing and exploration of geographic information. In particular, GeoKnow will apply the RDF model resp. the GeoSPARQL standard to represent resp. query geo-spatial data.
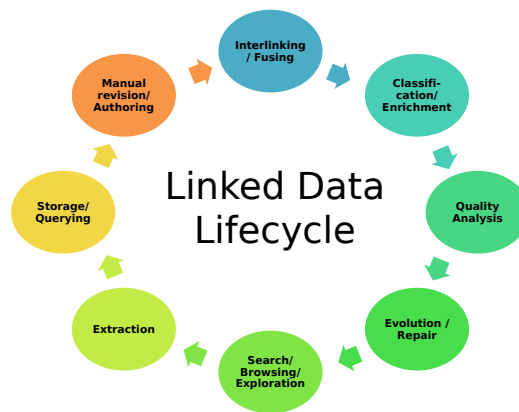

Fig. 1. Stages of the Linked Data Life-cycle supported by the Linked Data Stack.

Our vision is to make geo-spatial data accessible on the Web of Data and turn the Web in a place where geo-spatial data can be published, queried, reasoned, and interlinked according to the Linked Data principles. This will move geo-spatial data beyond syntactic interoperability to actual semantic interoperability,

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[1] http://geoknow.eu
[2] http://lod2.eu

and to services that can geo-spatially reason on the Web. Linked data will not only be extended with spatial data to be able to improve information retrieval based on geo-spatial data, or to answer questions that were not possible with isolated geo-spatial data, but also represents a step towards the discoverability of data that share geo-spatial features (i.e. supported by querying and reasoning), and a boosting for the geo-spatial data integration through geo-spatial data merging and fusing tools. The main GeoKnow contributions will be as follows:

Efficient geo-spatial RDF querying. Existing RDF stores lack performance and geo-spatial analysis capabilities compared to geo-spatially-enabled relational DBMS. We will focus on introducing query optimisation techniques for accelerating geo-spatial querying at least an order of magnitude.

Fusion and aggregation of geo-spatial RDF data. Given a number of different RDF geo-spatial data for a given region containing similar knowledge, we will devise automatic interlinking, fusion and aggregation techniques in order to consolidate them and provide a data set of increased value and quantitative quality metrics of this new data resource

Visualisation and authoring. We will develop reusable mapping components, enabling the integration of geo-spatial RDF data as an additional data resource in Web map publishing. We will also support expert and community-based authoring of RDF geo-spatial data within interactive maps, fully embracing crowdsourcing.

Public-private geo-spatial data. To support value added services on top of open geo-spatial data, we will develop enterprise RDF data synchronisation workflows that can integrate open geo-spatial RDF with closed, proprietary data. We will focus on the supply chain and e-commerce use cases.

GeoKnow Generator. This application will consist of a full suite of tools supporting the complete life-cycle of geo-spatial linked open data. The GeoKnow Generator will enable publishers to triplify geo-spatial data, interlink them with other geo-spatial and non-geo-spatial Linked Data sources, fuse and aggregate linked geo-spatial data to provide new data of increased quality, visualise and author linked geo-spatial data in the Web.

EU Project Networking Session

What will the project demonstrate:
- Overview of advancements and challenges in the Spatial Data Web
- Brief tool overview

What we expect to gain:
- EU project contributions for the Linked Data Stack (which we build as a project repository with the aim of increasing the maturity of the Linked Data tool chain)
- EU projects interested in using or further developing all components developed in the GeoKnow project aligned to the Linked Data Life-cycle

References

1. Sören Auer and Jens Lehmann. Making the web a data washing machine - creating knowledge out of interlinked data. *Semantic Web Journal*, 1(1-2):97–104, 2010.