Semantic Integration and Linking of Cultural Data from Heterogeneous Data Sources

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Abstract

As the Web is evolving in order to manage the continuously increasing volume of data, Web applications are becoming more automated and smarter. Due to the contribution of Semantic Web technologies the computers are able to understand the context of data.

This thesis is engaging with and contributes to the implementation of Semantic Web applications in the cultural linked open data (LOD) domain. The main goal is the semantic integration and interlinking of data that are generated through the documentation process of artworks and cultural heritage objects. This is accomplished by using state-of-the-art technologies and current standards of the Semantic Web (RDF, OWL, SPARQL), as well as widely accepted models and vocabularies relevant to the cultural domain (Dublin Core, SKOS, Europeana Data Model).

A set of specialized tools/frameworks such as KARMA and OpenRefine/RDF-extension is being used and evaluated in order to achieve the semantic integration of data from heterogeneous sources. Interlinking is achieved by the use of tools Silk and OpenRefine/RDF-extension, that discover links between local datasets and external data sources, such as DBpedia and Wikidata. Finally, a Web application was designed and developed in order to explore the integrated data and further interlink them with the data sources of DBpedia and Europeana. The application was developed with the JavaScript framework React.js. The infrastructure is based on the Apache Jena Fuseki server and TDB triple store.

URLs: [Thesis] [Presentation] (in Greek) [System] (in React.js)

Keywords: cultural data, semantic data integration, linked open data