Case Study on Linked Data and SPARQL Usage for Web Application Development

There are two web application architectures – 1. using a relational database, creating an application-specific schema, storing data closed in such DB, presenting information in HTML with no semantics of data, and offering export in other somewhat semantic formats if needed, or 2. using an RDF store as backend, choosing commonly adopted schemas to express data, presenting information as Linked Data and in XHTML+RDFa to keep data semantics, and exposing the store using a SPARQL endpoint.

Linked Data – every object or resource has its URI in order to be identified. Information resources have their Web representation (pages, e-messages, files), but non-information resources represent real-world objects. Wikipedia (in the form of DBPedia) and other sources are presented as Linked Data, to be reused.

Syntax – RDF is syntax-independent. Data are expressed as a graph of triples. To exchange information, there are various syntaxes: RDF/XML, Notation 3, RDF/JSON or RDFa for encoding RDF into (X)HTML pages.

Research group portal architecture

http://keg.vse.cz/

Interlinking – Information about resources may be present in more than one RDF store. And what more, they may have different URIs. To share and exchange information, it is necessary to map source URIs using aliases. To create one, we use the owl:sameAs property. Then we can ask other stores for additional information.

Example: (see below) a person from a research group has publications in proceedings described in the DBLP store.

Some of schemas/ontologies are widely adopted and considered as near-standards. Using such schemas increases the ability to share data, as other applications can be assumed to understand them. We chose FOAF for the description of people and relations, SIOC for interlinked communities, DOAP for software and artifact projects, Dublin Core for library data and RDF Calendar for events and tasks.


Remote query: get information about publications using an alias of a person.