

# SPARql to Object Oriented eNgine

The Web of Data vision raises the problem of how to expose existing data sources on the Web without requiring heavy manual work. Our approach facilitate **SPARQL** queries over heterogeneous data sources, through the use of an object-oriented abstraction which can be automatically mapped and translated into an ontological one; this approach, on the one hand, helps data managers to disclose their sources without the need of a deep understanding of Semantic Web technologies and standards and, on the other hand, takes advantage of object-relational mapping technologies to deal with different types of data sources (relational DBs, but also XML sources, object-oriented DBs, LDAP, etc.). **SPOON**(**SPARql to Object Oriented eNgine**) is the first implementation of our approach; it is a tool that helps data managers to publish their (heterogeneous) data sources on the Semantic Web as SPARQL endpoints.

SPOON is able to manage such sources through an object-oriented virtualization layer compliant with the **JDO2 specification**. This JDO abstraction layer is then translated in a corresponding ontological model by using a totally automatized one-to-one mapping. This online wrapping of the object-oriented model allows to avoid synchronization problems between the two models.

SPARQL queries are processed and translated to JDOQL queries and then are executed over the object-oriented virtualization layer, using **JPOX** as persistence manager tool.

The current implementation of SPOON supports only a subset of SPARQL queries (BGPs and FILTER) and does not (yet) support variables on predicates.

To prove our approach we built a testing framework using the **Gene Ontology** data source, which is available both as SQL dump and RDF graph. The evaluation is then made by comparing results and performances when executing a common set of SPARQL queries with SPOON and with other competing approaches (namely, D2R over the relational source and plain SPARQL over the native RDF repository).

- evaluation data: see **Gene Ontology web-site**
- evaluation queries: see **GO Wiki "Example Queries" page**
- evaluation results: see **SPOON Evaluation Report** (and download also **JPOX configuration** and **D2RQ mapping definition**)