# Kotsomit

## Semantic Search Facility for DSpace

1 Semantic Search Facility for DSpace
1.1 Overview
1.2 Semantic Search v2.0
1.3 Deployment Instructions (v1.0)

### Overview

This is a small info page about the Semantic Search facility for DSpace developed at HPCLab, University of Patras.

**Semantic Search** allows intelligent search of DSpace content, using Semantic Web technologies. Most inportantly semantic search **does not affect the original DSpace data model** but, by using a technique known as semantic profiling [1] it allows inference-based search and knowledge discovery that would otherwise be impossible.

To promote semantic interoperability, semantic search is performed against an ontology that is automatically populated with harvested metadata through the OAI-PMH interface. The repository's ontology follows the **OWL 2.0** proposed standard and implements its new extensions. It can be accessed independently here. The semantic search facility offers sound and complete reasoning for such ontologies based on the FaCT++ Description Logics Reasoner. Development utilizes the OWL API, thus it is straightforward to use other compatible reasoners as well, such as Pellet. Query syntax follows the Manchester Syntax familiar in the DL-query Tab of Protege 4.0.

Semantic Search has been incorporated into the official University of Patras Institutional Repository installation http://repository.upatras.gr/dspace/.

### Semantic Search v2.0

The semantic search facility has now been totally refactored as an **add-on for Dspace**, thanks to **Ricardo Borillo** from University Jaume I of Castellon, Spain. In addition, a series of new features are implemented, including:

- **New intuitive query interface**, based on guided construction of Manchester Syntax queries.
- Support for **OWL API v3.1.0**.
- Introduction of the **Dspace Semantic API** as a "catch-all" for all ontology-related tasks.
- Support for latest **FaCT++** and **Pellet**.
- **"Hot-swap"** between reasoners.
- **Caching** loaded ontologies.

Semantic Search for DSpace is currently under ongoing development and hosted as a google code project.
A demo installation of Semantic Search for DSpace is available at the google code page.
A preliminary patch adding this new facility to DSpace has been released in JIRA.

### Deployment Instructions (v1.0)

The deployment instructions are available as a pdf file. Semantic Search code and all necessary files are provided in a zip package.

Note that these instructions apply particularly for DSpace 1.4.2. Since, however, this service is based on interoperability interfaces (OAI-PMH) it should work with any servlet-based DSpace version that also supports OAI.

For more information please contact Dr. Dimitrios Koutsomitropoulos.

---

*To measure performance, Semantic Search uses the YourKit product. YourKit is kindly supporting open source projects with its full-featured Java Profiler. YourKit, LLC is the creator of innovative and intelligent tools for profiling Java and .NET applications. Take a look at YourKit's leading software products: YourKit Java Profiler and YourKit .NET Profiler.*