

Terminological Ontologies and Vocabulary Broker for Open Science



*Bernd Ritschel¹, Günther Neher², Toshihiko Iyemori³, Yasuhiro Murayama⁴

1. None, 2. University of Applied Sciences Potsdam, 3. Data Analysis Center for Geomagnetism and Space Magnetism, Graduate School of Science, Kyoto University, 4. National Institute of Information and Communications Technology, Japan

Keyword vocabularies as part of metadata standards, such as NASA GCMD DIF, SPASE data model, ESPAS keyword ontology or UAT thesaurus are used to tag and qualify specific metadata elements in a standardised way. The different concepts behind the used keywords transport specific semantic knowledge about features of the tagged elements. The scope and the validity of the concepts and keywords normally is limited to a specific domain, such as earth and space physics or astronomy. Natural language is used to express the semantic of the concepts and appropriate keywords. Therefore diverse keywords are used in different metadata standards to express same or very similar concepts. Even in the same domain different keywords are used to describe the same concept. Out of that there is the problem using keywords for the search of data within different repositories. In order to overcome this challenge, we have developed a semantic Web based Vocabulary Broker framework which is connecting appropriate keywords mainly using "skos:closeMatch" relationships for the expression of concordances. Terminological ontologies derived from the above mentioned metadata standards are processed, and semantic based keyword matches are generated. The original ontology and the mapped parts are managed by the Open Semantic Framework (OSF). The Vocabulary Broker application provides both, schema based browsing and keyword search features. The main idea of the Vocabulary Broker, the semantic (Web) based mashup of keywords, prepares the way for a seamless and overlapping data search within different data repositories, which are managed by different metadata standards. This idea works within a domain or even cross-domain. Therefore our approach is a valuable contribution to mashup data and knowledge within an Open Science environment.

Vocabulary Broker URL: <http://wdcosf.kugi.kyoto-u.ac.jp>

Keywords: Metadata Standard, Keyword Vocabulary, Terminological Ontology, Matching Ontologies, Vocabulary Broker, Open Science

World Data System Vocabulary Broker - Proof of Concept
Linking Research Data

[Home](#) | [GCMD Keywords](#) | [SPASE Keywords](#) | [ESPAS Keywords](#) | [UAT Keywords](#)

Navigation

- [About](#)
- [Related Publications](#)
- [Contact](#)
- [Login](#)

Update of Search Results page

Submitted by wdcosf on Fri, 08/26/2016 - 19:55

To improve user experience we modified the presentation of search results when performing a "Concept Search". Instead of just displaying the Concept keyword, we now show additional context information like the keyword scheme to which the term belongs (GCMD, SPASE, ESPAS or UAT respectively), a short definition of the term if available from the vocabulary maintainers, and direct links to <skos:relatedMatch> or <skos:closeMatch> keywords from other vocabularies, if they exist.

[Read more](#) [wdcosf's blog](#) [Add new comment](#)

Integration of UAT vocabulary

Submitted by wdcosf on Thu, 08/11/2016 - 22:20

The domain-oriented [Unified Astronomy Thesaurus](#) vocabulary is based on concepts which are also used in neighboring domains, such as geophysics, especially magnetic field research, near earth-space exploration and solar-terrestrial physics. The space weather and space climate domains are covered by UAT concepts too. Therefore we think, the integration of the UAT vocabulary into the Vocabulary Broker is a benefit for astronomers but also geo and space scientists.

Concept Search

Recent blog posts

- [Update of Search Results page](#)
- [Integration of UAT vocabulary](#)
- [Update of GCMD Keywords](#)
- [Feasibility test: Integration of context-sensitive SPARQL query to DBPedia](#)
- [Vocabulary Mapping Algorithm updated](#)

[More](#)