Meta-Ontology for Ontology Categories

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http://ontolog.cim3.net/cgi-bin/wiki.pl?OOR/ConferenceCall_2013_10_08
Outline

1. The role of meta-ontology categories in the OOR context
2. The OOR examples (BioPortal, SOCoP, COLORE, Ontohub)
3. Criteria to classify ontologies (OMV, LoLa, etc.)
4. OOR consensus on categories: questions and actions
Meta-ontology categories in the OOR context

...besides giving a complete specification of an ontology

Meta-ontology categories play several important roles in an OOR

Primary roles
- Organising ontology collection
- Facilitating ontology retrieval

Related roles
- Exchange and advancement of knowledge
  e.g. smart grouping (task, type, logics etc.) allows
  - novel interoperability scenarios
  - ontology reuse across domains

Impacts OOR functionality
  e.g. via User Interface (browsing and uploading ontology by accessing meta-data)

Should we foster an agreement on the (meta) categories for classification of ontologies (across OOR)?

<table>
<thead>
<tr>
<th>Categories</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>OOR independent</td>
<td>• domain centred application (e.g. biomed, geo, logics)</td>
<td>• interoperability issue • closed community</td>
</tr>
<tr>
<td>OOR aligned</td>
<td>• interoperable across OOR • comprehensive • enhances reusability</td>
<td>• paternalistic • impact specificity of categories</td>
</tr>
</tbody>
</table>
The OOR examples: COLORE categories

Ontologies

The ontologies in the repository are organized into hierarchies:

- algebra
- approximate_point
- between
- between_quaternary
- betweenness_bundle
- bipartite_incidence
- boxworld
- cardworld
- cayley_graph
- cimosa
- combinatorial_magma
- combined_time
- contact_algebras
- cyclic_arithmetic
- cyclic_geometry
- cyclic_ordering
- date_time_vocabulary
- dolce
- dolce_constitution

> 100

Meta-Ontology for Ontology Categories
/Openning Brief/ A. Sojic

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The OOR examples: BioPortal categories


Categories retrieved from XML file via NCBO_REST_service

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The OOR examples: SOCoP categories

BioPortal platform

List of (Mike Dean) categories

- general; not (so much) domain-specific
- more systematic than BioPortal
- arbitrary in limiting choices
- uncertainty in categorising subjects
  e.g. architecture, agriculture etc.
- ‘enriched’ with (uploaded) meta-data
The OOR examples: Ontohub categories

Ontohub metadata ontology (work in progress) [Download]
Imports:
- Domain-fields ontology (Core and Extension)
- Bioportal meta data ontology (N. Noy)
  including OMV, ChAo, Protégé Mappings Ontology

Task:
integration of LoLa

LoLa - the ontology of logics and languages

Domain-Fields can be aligned with BioPortal and SOCoP categories
LoLa integration should provide interoperability with COLORE categories

Alignment of LoLa and OMV categories:
OntologyLanguage, OntologySyntax, FormalityLevel, KnowledgeRepresentationParadigm

Open questions:
OMV – LoLa alignment (ref. Christoph Lange)
Classification of Domain-Fields (Core and Extension); platform choice
Interoperability across OOR, e.g. BioPortal, COLORE, SOCoP etc.
The OOR examples: Ontohub (domain) categories

Domain-fields ontology (Core)
based on International Standard Classification of Education (ISCED)
a member of the UNESCO family of classificatory systems
Criteria to classify ontologies

Questions to ask while classifying an ontology: What? Why? How?

OMV - Ontology Metadata Vocabulary
Scope: metadata
Includes properties of ontologies e.g.

- **OntologyType**
  - Application Ontology
  - Core Ontology
  - Domain Ontology
  - Task Ontology
  - Upper Level Ontology

- **FormalityLevel**
  - Schema
  - Taxonomy
  - Terminology
  - Thesaurus
  - Vocabulary

- **KR Paradigm**
  - Description Logics
  - DAG
  - Frames

- **OntologyLanguage**
  - RDF(S)
  - CASL
  - CASL_DL
  - CoCASL
  - CommonLogic
  - ConstraintCASL
  - GenCASL

- **OntologyTask**
  - AnnotationTask
  - ConfigurationTask
  - FilteringTask
  - IndexingTask
  - IntegrationTask
  - MatchingTask
  - MediationTask
  - PersonalizationTask
  - QueryFormulationTask
  - QueryRewritingTask
  - SearchTask

OmLA – an ontology of ontologies
Scope: logics and languages

Ontology of Ontology Domains
Should we have one, more or none?
Can the Domain-Fields Ontology (Core) support interoperability across OOR (domain) categories?
The extension – left to the domain experts
OOR consensus on categories: questions and actions

1. Should we foster a consensus on the (meta) categories for classification of ontologies (across OOR)?

2. Should a standardisation of ontology meta-data also include categories of ontology domains?

3. Action: Proposing a minimum of requirements for a meta-ontology that - provides interoperability across OOR categories - and the OOR community wants to endorse them
References:


Mossakowski, Till, Oliver Kutz, and Mihai Codescu. "Ontohub-a repository engine for heterogeneous ontologies and alignments." (preprint) PDF