Open Ontology Repository initiative

- Planning Meeting -

Thu 2008-01-03

Co-conveners: PeterYim, LeoObrst & MikeDean

ref.: http://ontolog.cim3.net/cgi-bin/wiki.pl?ConferenceCall_2008_01_03

Purpose

We are using this conference call to explore and possibly plan on kicking-off an Open Ontology Repository initiative, which a few of the folks in the community feels that a collaborative effort on such would be a meaningful thing to move forward with.

Agenda

- Welcome – meeting call to order (co-chairs)
- Participants self-introduction (all)
- Background (co-conveners)
- Discussion (all):
  - Needs & requirements
  - Goals – Mission Statement
  - Putting an initial team together
  - ...
  - Next Step(s)

Background

- What brought us all here?
- Existing work
- Requirements
- the Need for
  - “Open”
  - “Global”
  - “Collaboration”

Toward an Ontology Repository

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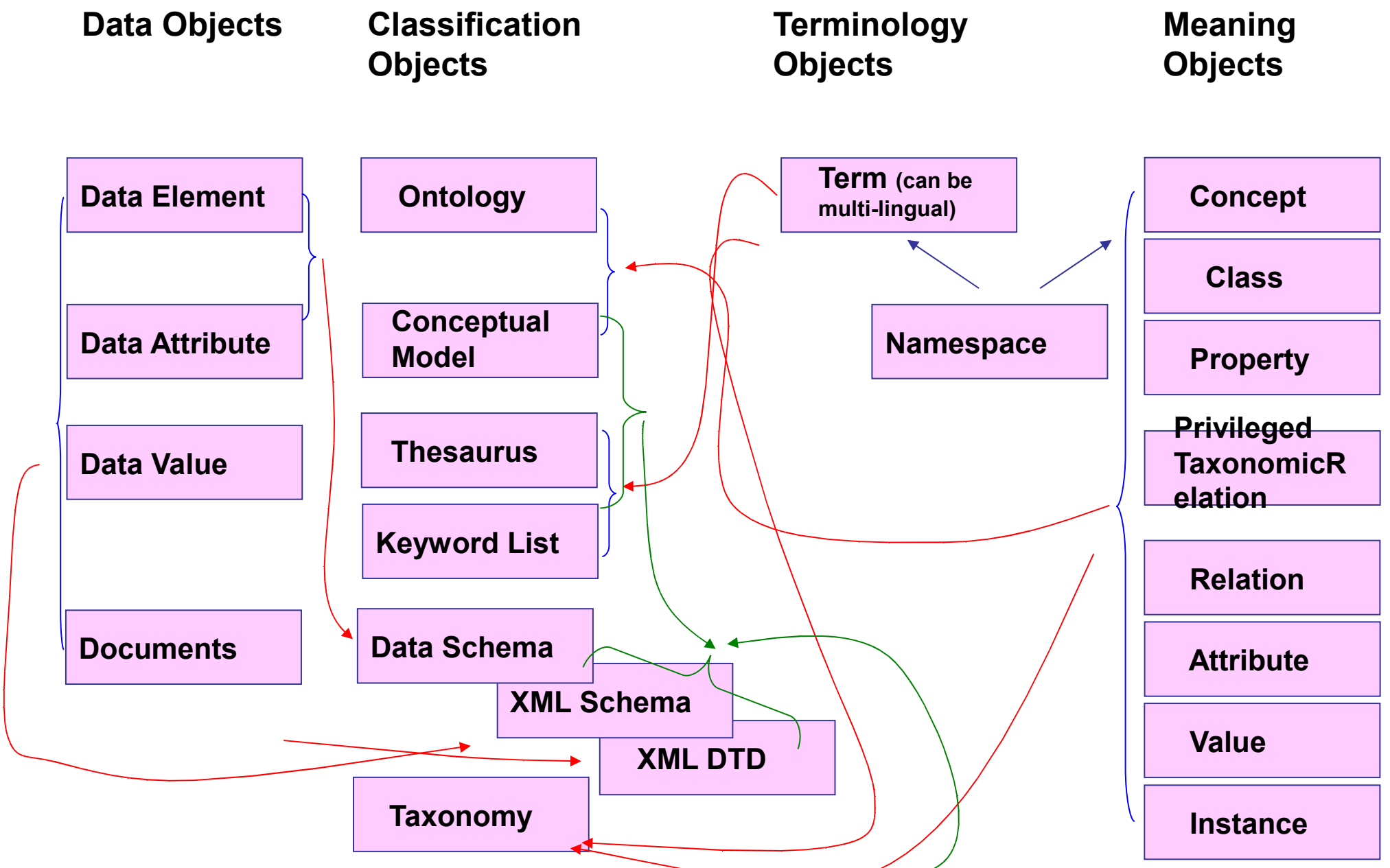
Example: Metadata Registry/Repository – Contains Objects + Classification



*Functional Requirements of an RDF/OWL Repository 1

- Provide Capability to Submit an Ontology to the Repository.
  - Extract administrative and descriptive data from the metadata fields of an OWL ontology.
    - Metadata should follow existing metadata standards.
    - Submitted items should be tracked with version numbers (after determining the levels of granularity needed for versioning).
    - Generate a meta-card entry for the ontology.
- Provide Centralized Data Storage.
  - Ontology metadata (ontology metadata includes the source, date, version number and other core metadata as defined by appropriate standards bodies).
  - OWL ontology.
  - RDF store.
  - Linkage to XML and database data and documents.
- Metrics and Logging Requirements.
  - Provide data access metrics.
  - Provide data storage metrics.
  - Provide audit logs of repository activity.

*RDF/OWL Repositories: White Paper, MITRE, 2006, Leo Obrst, David Ferrell, Amy Kazura, Patrick Cassidy, Steven Davis, Karla Massey

Functional Requirements of an RDF/OWL Repository 2

- Provide User Services via a Web Interface to.
  - Search metadata indices.
  - Link from the metadata index to the specific OWL or RDF storage location.
  - Browse repository contents.
  - Provide visual representation of ontologies.
  - Search RDF instance stores with ontology-assistance.
  - Specify agent-directed searches of instance store content.
- Machine User Services.
  - Query repository and triples store using a conceptual query language, such as SPARQL.
  - Query the repository and triples store using REST.
  - Query the repository and triples store using SOAP.
  - Use an API to programmatically create, view, and modify repository contents.
  - Define machine services in appropriate machine-interpretable format, such as OWL-S.

Functional Requirements of an RDF/OWL Repository 3

- Provide a Repository of Downloadable Web Tools.
  - Define a process with criteria for determining what kinds of tools to make available.
  - Provide an index to available tools.
  - Provide search capability to available tools.
- Validation Requirements.
  - Validate an OWL ontology to ensure that it is valid OWL.
  - Confirm the RDF against its terminology defined in RDFS.
- OWL Services.
  - Browsing Services.
  - Query Services.
  - Indexing Services.
    - Provides services for external search engines and entity extractors to index and mine repository contents.
  - Visualization Services.
  - Edit Services.
  - Validation Services.
  - Annotation Services.

Functional Requirements of an RDF/OWL Repository 4

- OWL Services (Continued)
  - Web-Page Markup.
  - Semantic Search Services.
  - Crawl and Index.
    - OWL Semantic Search Services crawl and index OWL content on the Web. Users submit logical queries which are answered with exact data. It can broaden queries with simple inference, such as equivalence, inversion, generalization and specialization.
- Reasoning Services.
  - Provide services to check ontology consistency, build classification, verify concepts' satisfiability and check entailment.
  - Provide services to support rules and execute minimally automated deductive reasoning and proof.
- Import Services.
  - Support importing of modular ontologies into larger ontologies; this is at least partially a function of the knowledge representation language itself.

Functional Requirements of an RDF/OWL Repository 5

- Semantic Mapping Services.
  - Schema Translation.
    - Automatically generate translation code between database schemas with an OWL mapping specification.
  - Visually-aided Mapping.
    - A user would generate a mapping between an existing ontology and the ontology expected by the custom visualization tool. The data would then be translated according to the mappings. The resulting data can then be viewed by the custom visualization tool.
  - Disambiguation.
    - A user would generate a mapping between multiple ontologies to identify where classes and properties are the same. The data from multiple sources could then be imported into a repository where a reasoning tool can determine what objects are the same. The results could then be viewed in a browser.
- Ontology and Instance Versioning Services.
  - Provide services to support semantic versioning of ontologies and knowledge bases (instances).
- Terminology to Concept Mapping Services.
  - Provide services to support mapping user terminology to the concepts that represent the meaning of that terminology, using thesauri, lexicons, and other terminological resources.

Discussion