Metadata for FIBO

OOR Working Session
6 March 2012
Overview

• FIBO Metadata Requirements
• Ambition: Implement as OWL Annotation Properties
• OMG Metadata proposals
• Rendering DC, SKOS
• Extending for Provenance
• Other Metadata
• What next…
FIBO Metadata

• What we have in FIBO already
  – To be converted into OWL Annotation
    Property based metadata for non lossy OWL

• What we know we would like

• Future Metadata
What’s in FIBO

Debt Security has interest terms Debt Security Interest Terms Set

These are currently maintained as informal text in the UML “Notes” field.
FIBO Metadata Requirements

• In model now
  – Provenance (of semantics)
  – Archetypes
  – Synonyms

• Needed
  – Classification facets
  – Semantic grounding in Global Terms (citation)
OMG Metadata Proposals

<table>
<thead>
<tr>
<th>Explanatory Notes</th>
<th>termOrigin</th>
<th>original source / reason for including a particular entity in the model</th>
<th>N</th>
<th>Y</th>
<th>This element comes from the EDM Council FIBO effort, and may be needed for vocabularies that blend terms from multiple sources (for example, SysML QUODV vs. NASA/TO QUODT in a potentially forthcoming vocabulary for quantities and units)</th>
<th>skos:note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>definitionOrigin</td>
<td>origin for the definition of the entity</td>
<td>N</td>
<td>Y</td>
<td>a note about the source text from which the definition was derived; this could be used in conjunction with the source property, which would point to the actual source document; again this comes from the EDM Council FIBO effort</td>
<td>skos:note</td>
</tr>
<tr>
<td></td>
<td>changeNote</td>
<td>documents finer-grained changes to a particular entity for a particular version of the content model</td>
<td>N</td>
<td>Y</td>
<td></td>
<td>skos:changeNote</td>
</tr>
<tr>
<td></td>
<td>historicalNote</td>
<td>describes significant changes to the meaning or form of an entity, from a historical perspective</td>
<td>N</td>
<td>Y</td>
<td></td>
<td>skos:historyNote</td>
</tr>
<tr>
<td></td>
<td>scopeNote</td>
<td>supplies some, possibly partial, information about the intended meaning of an entity, especially with regards to limiting its scope/usage in practice</td>
<td>N</td>
<td>Y</td>
<td></td>
<td>skos:scopeNote</td>
</tr>
<tr>
<td></td>
<td>usageNote</td>
<td>supplies some guidance about the usage of a particular entity within some context</td>
<td>N</td>
<td>Y</td>
<td></td>
<td>skos:note</td>
</tr>
</tbody>
</table>

This is just an extract showing some of the FIBO elements
DC and SKOS Implementation

• The idea: Define DC and SKOS terms which we need
• Render these as OWL Annotation Properties
• Extend for FIBO-specific metadata
  – E.g. Term Origin, Definition Origin
DC Profile

Extensions provided locally since this version of EA does not support inheritance of these across profiles.
This profile and diagram includes SKOS elements to be used in FIBO annotations along with non-SKOS extensions to those.

The extension of these annotation terms as "Dependency" is a short cut to indicate a "fact" the predicate of which is the stereotype. The subject and object of the fact are the supplier and client ends of the dependency, respectively.

Should use RDFS Label not SKOS Label (there is no SKOS Label). Add operationalLabel sub type of allLabel.
Provenance Extensions Profile

Entity

OWL ODM-FIBO::
annotationProperty

Dublin Core:
dctSource

TermOriginDocument

TermOriginalName

DefinitionOrigin

DefinitionAdaptedFrom

TermOriginStandard

AssociationClass

Use Dependency extension as a short cut to indicate a "fact" that is an instance of these annotation relationships. The predicate of the fact is the stereotype of the dependency relationship, subject and object are the supplier and client ends of the dependency.

These are mutually exclusive. This is not modeled here. Needs OCL to indicate this (not given in this version).

+ direction: Direction = Source -> Destination

«meta»

«extends»

«extends»

«extends»

«extends»

«extends»

«extends»

«extends»
Textual Metadata Property Rendition

There is a bit of a tool-specific wrinkle here...

What should be here: Something named as rdfsLiteral which is stereotyped as rdfsClass

We need a hard coded shortcut to this.
FIBO Provenance

• Term Origin
  – Actually two sets of information
    • The standard, document or website from which we gleaned the term;
    • The name of that term in that standard or document

• Definition Origin
  – Two mutually exclusive terms:
    • Definition Origin
    • Definition Adapted From
Supporting Ontologies

• OWL Annotation Properties have ranges of:
  – RDFS Literal (for definitions, notes)
  – Standards
  – Documents
• Where these are “Things” we use terms from within the ontology for the classes which are the ranges of these properties
• Much of this was already in the ontology
Standards and Documents Ontology

Supporting names:

- Draft Standard
- Published Standard
- ISO Standard
- Document
- Web Page
- Formal Document

Supporting attributes:

- Version
- Publication Date
- Document Identifier
- URL

Classes:

- Standard
- Published Standard
- ISO Standard
- Draft ISO Standard
- Draft Standard

Relations:

- has part
- becomes
- published by
- set by
- set and published by

Examples:

- Published ISO Standard
- Draft Standard
- Published Standard

Notes:

- Needs work...
- To be done: XML, UML based standards
Archetypes

• Similar approach to Textual Metadata
• Identify class which “isArchetype”
  – Typed literal Type=Boolean
• Identify that class is “ofArchetype”
  – UML dependency base class
Implementation

• Instances of OWL Annotation Properties are annotation “facts”
• Render these via UML dependency base class
  – Each instance of e.g. skos:definition is an instance of the OWL Annotation Property defined as above
• Added these to Profile, for rendition in the model
Next up:

• Classification facet
  – Multiple inheritance model supports the ability to classify things according to multiple facets
  – Want to be able to identify specific facets
  – UML (but not OWL) supports the detailed types of facets (MECE etc.)
    • So this is not available as OWL constructs

• Still working on this
  – Think we need a class-level element for the actual facet
  – Could then extract single inheritance taxonomies by business context
Other FIBO Ambitions

• Mapping
  – To XMI and UML standards
• Rulemaking and compliance

• Over to David…