OWL Ontology for Thesaurus Data
A description of the OWL features used in the SKOS-Core RDF vocabulary for thesauri

Abstract:
This report describes the features of OWL that are used in the SKOS-Core RDF vocabulary for thesaurus data to express additional semantics and constraints that may not be expressed with RDF Schema alone.

Project name:
Semantic Web Advanced Development for Europe (SWAD-Europe)
Project Number:
IST-2001-34732
Workpackage name:
8. Thesaurus Research Prototype
Deliverable title:
8.6: thesaurus_daml_oil_report
This version:
http://www.w3.org/2001/sw/Europe/reports/thes/8.6/version02.html
Latest version:
http://www.w3.org/2001/sw/Europe/reports/thes/8.6/
Previous version:
http://www.w3.org/2001/sw/Europe/reports/thes/8.6/draft01.html
Status:
Completed
Authors:
Alistair J. Miles, CCLRC

Status of this document
This section describes the status of this document at the time of its publication. This is a draft document and may be updated, replaced, or obsoleted by other documents at any time. The latest status of this document series is maintained at the W3C.

This document is a public DRAFT for discussion. This guide and the SKOS-Core schema are an output of the research work of the Semantic Web Advanced Development for Europe Project, which is associated with the W3C Semantic Web Activity. This document is made available by W3C for discussion only. Publication of this document by W3C does not imply endorsement by W3C, including the Team and Membership.

Comments on this document are welcome and should be sent to the authors or to the public-esw-thes@w3.org list. An archive of this list is available at http://lists.w3.org/Archives/Public/public-esw-thes/

Contents
1. Introduction
2. OWL Features of SKOS-Core
3. Constraints and Semantics Not Expressible With RDFS or OWL

References
Appendix: SKOS-Core Schema (02/06/2004)

1. Introduction

This report describes the features of OWL that are used in the SKOS-Core RDF vocabulary as it stands at 02/06/2004, to express additional semantics and constraints on the SKOS data model.

The SKOS model is an abstract data model defining the structure of a thesaurus. The SKOS-Core vocabulary is an encoding of this model using RDF Schema. Some semantics and constraints present in the data model cannot be expressed by RDF Schema alone, but require features of OWL. These are described here. Also, some semantics and constraints cannot be expressed by either RDFS or OWL, and these are also described.

2. OWL Features of SKOS-Core

The following properties are declared to be of type owl:TransitiveProperty:

- skos:broader
- skos:narrower
- skos:broaderGeneric
- skos:narrowerGeneric
- skos:broaderPartitive
- skos:narrowerPartitive
- skos:relatedPartOf
- skos:relatedHasPart
The following property pairs are declared to be each other's inverse, via a statement using the owl:inverseOf predicate:

- skos:broader / skos:narrower
- skos:broaderInstantive / skos:narrowerInstantive
- skos:broaderGeneric / skos:narrowerGeneric
- skos:broaderPartitive / skos:narrowerPartitive
- skos:relatedPartOf / skos:relatedHasPart

The following properties are declared to be of type owl:SymmetricProperty:

- skos:related

### 3. Constraints and Semantics Not Expressable With RDFS or OWL

- Each resource of type skos:Concept may have no more than one value of the skos:prefLabel property FOR EACH LANGUAGE.
- Two resources are identical (can be declared to be owl:sameAs) iff they both have the same value for the property skos:prefLabel AND the same value for the property skos:inScheme.
- Two resources are identical (can be declared to be owl:sameAs) iff they both have the same value for the property skos:externalID AND the same value for the property skos:inScheme.

### References

[SKOS GUIDE]

[SKOS SCHEMA]

[OWL]

[RDFS]

### Appendix: SKOS-Core Schema (02/06/2004)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF xml:base="http://www.w3.org/2004/02/skos/core" xmlns:rdf="&rdf;" xmlns:rdfs="&rdfs;" xmlns:dc="&dc;" xmlns:dct="&dct;" xmlns:owl="&owl;">

<!-- This schema is described by the SKOS-Core 1.0 Guide, which can be found at http://www.w3.org/2001/sw/Europe/reports/thes/1.0/guide/ -->

<rdf:Description rdf:about="">
  <dct:title>SKOS-Core 1.0</dct:title>
  <dct:abstract>The SKOS-Core 1.0 RDF schema for encoding simple concept schemes such as thesauri and subject heading schemes.</dct:abstract>
  <dc:creator>Beckett, D.</dc:creator>
  <dc:creator>Miles, A.J.</dc:creator>
  <dc:creator>Rogers, R.</dc:creator>
  <dc:creator>Guha, R.V.</dc:creator>
  <dct:modified>2004-02-06</dct:modified>
</rdf:Description>

<!-- Fundamental classes -->
<rdf:Class rdf:about="skos:Concept"/>
<rdf:Class rdf:about="skos:ConceptScheme"/>

<!-- Properties -->
<rdf:Property rdf:about="skos:broader"/>
<rdf:Property rdf:about="skos:narrower"/>
<rdf:Property rdf:about="skos:broaderInstantive"/>
<rdf:Property rdf:about="skos:narrowerInstantive"/>
<rdf:Property rdf:about="skos:broaderGeneric"/>
<rdf:Property rdf:about="skos:narrowerGeneric"/>
<rdf:Property rdf:about="skos:broaderPartitive"/>
<rdf:Property rdf:about="skos:narrowerPartitive"/>
<rdf:Property rdf:about="skos:relatedPartOf"/>
<rdf:Property rdf:about="skos:relatedHasPart"/>
<rdf:Property rdf:about="skos:related"/>

<!-- Other classes -->
<rdf:Class rdf:about="skos:ConceptScheme"/>
<rdf:Class rdf:about="skos:Property"/>
<rdf:Class rdf:about="skos:Literal"/>
</rdf:RDF>
```