

Update: The state of KOS in the Linked Data movement

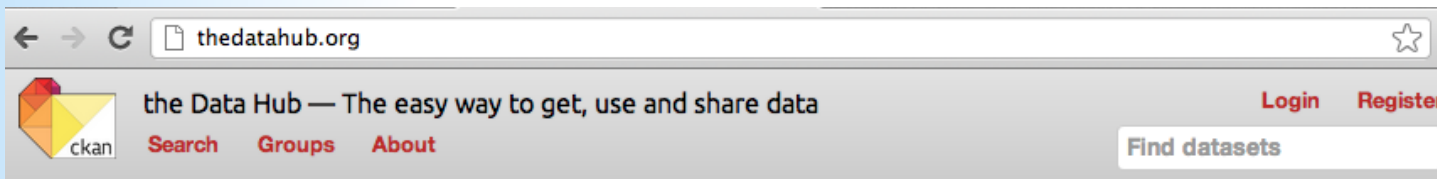
- And Some Suggestions to the Getty
Vocabulary Program

Marcia Zeng
International Terminology Working Group Meeting
January, 7-10, Getty Research Institute, LA

1. Value vocabularies in the Linked Data Hub - CKAN The Data Hub
2. Suggestions to the Getty Vocab Program
3. Thesaurus data model and alignment with SKOS

Outline

1. Value Vocabularies in The Data Hub of CKAN



<http://thedatahub.org/>

Welcome to the Data Hub!

Find data

Find datasets

the Data Hub contains **4538 datasets** that you can browse, learn about and download.

Share data

Add your own datasets to share them with others and to find other people interested in your data.

[Sign up »](#)

Collaborate

Find out more about working with open data by exploring these resources:

- [GetTheData.org](#)
- [DataPatterns.org](#)
- [Open Data Handbook](#)

Who else is here?

Canada

Datasets for <http://www.datadotgc.ca/>. DataDotGC, which launched, in February 2010, is a Canadian, citizen-led effort to promote open data and help share data that has already been...

Canada has **521 datasets**.

Linking Open Data Cloud

This group catalogs data sets that are available on the Web as Linked Data and contain data links pointing at other Linked Data sets. The descriptions of the data sets in this group are...

Linking Open Data Cloud has **332 datasets**.

bioportal

This group reflects the collection of datasets (ontologies) in BioPortal.

bioportal has **244 datasets**.

OpenSpending

Datasets to be imported to the OpenSpending.org site. [Packages listed here](#) will automatically be

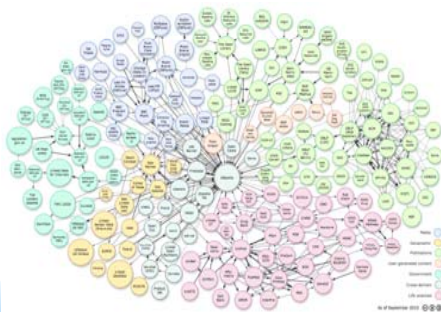
Bibliographic Data

This group comprises open bibliographic datasets according to the [Principles on Open Bibliographic](#)

International Budget Partnership



The Data Hub
— 3880 datasets



LOD Cloud group
327 datasets

The Data Hub of CKAN (3880 datasets)

- Most notable: Linking Open Data (LOD) group, now has 327 dataset (2012-10) while the cloud showed 295 (2011-09)
- Other groups see: <http://ckan.net/group>.
- Including:
 - Library Linked Data Group:
(57 datasets, mostly link to non-library datasets)
 - Bibliographic Data group (89 datasets)
 - Other groups cover almost every areas, big or small

Available formats :

CSV | RDF | XML | XBRL | SDMX | HTML+RDFa | other

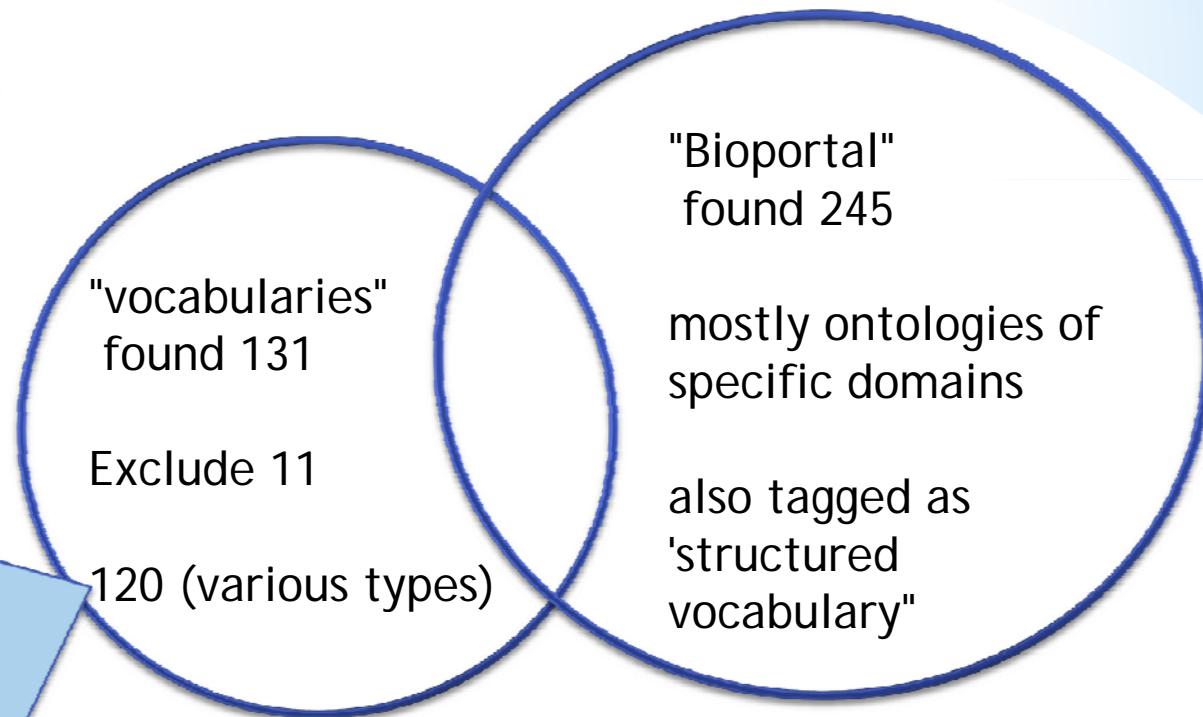


The Data Hub
— 3880
datasets

➤ Searching the Data Hub, found over 300 datasets that are value vocabularies or contain a component of value vocabularies,

Including many value vocabularies:

- lists,
- dictionaries,
- name authorities,
- classification schemes,
- subject headings,
- thesauri,
- ontologies
- vocabulary registries



Linked Open Vocabularies

– Subject Vocabularies, Value Lists

LC Linked Data Service

Authorities and Vocabularies



Available Datasets

The Linked Data Service provides access to commonly found standards and vocabularies promulgated by the Library of Congress. This includes data values and the controlled vocabularies that house them. The following are currently available:

- > [LC Subject Headings](#)
- > [LC Name Authority File](#)
- > [LC Classification](#)
- > [LC Children's Subject Headings](#)
- > [LC Genre/Form Terms](#)
- > [Thesaurus for Graphic Materials](#)
- > [MARC Relators](#)
- > [MARC Countries](#)
- > [MARC Geographic Areas](#)
- > [MARC Languages](#)
- > [ISO639-1 Languages](#)
- > [ISO639-2 Languages](#)
- > [ISO639-5 Languages](#)
- > [Extended Date/Time Format](#)

Preservation Vocabularies

- > [Preservation Events](#)
- > [Preservation Level Role](#)
- > [Cryptographic Hash Functions](#)

<http://id.loc.gov/>



World Wide Web

human-readable

URI(s)

- > <http://id.loc.gov/authorities/subject>
- > <info:lc/authorities/sh95000541>
- > <http://id.loc.gov/authorities/sh95000541>

Variants

- >  [W3 \(World Wide Web\)](#)
- >  [Web \(World Wide Web\)](#)
- >  [World Wide Web \(Information retrieval system\)](#)
- >  [WWW \(World Wide Web\)](#)

Broader Terms

- >  [Hypertext systems](#)
- >  [Multimedia systems](#)


Narrower Terms

- >  [Invisible Web](#)
- >  [Mashups \(World Wide Web\)](#)
- >  [Semantic Web](#)
- >  [Web 2.0](#)
- >  [WebDAV \(Standard\)](#)
- >  [WebTV \(Trademark\)](#)

Related Terms

- >  [Internet](#)

Exact Matching Concepts from Other Schemes

- > http://aims.fao.org/aos/agrovoc/c_36891 
- > <http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb13319953j> 

Example: a LCSH entry
at <http://id.loc.gov/>

World Wide Web

URI(s)

- > <http://id.loc.gov/authorities/subjects/sh95000541>
- > <info:lc/authorities/sh95000541>
- > <http://id.loc.gov/authorities/sh95000541#concept>

can be
viewed/downloaded in
these formats

human-readable

Alternate Formats

- > [RDF/XML \(MADS and SKOS\)](#)
- > [N-Triples \(MADS and SKOS\)](#)
- > [JSON \(MADS/RDF and SKOS/RDF\)](#)
- > [MADS - RDF/XML](#)
- > [MADS - N-Triples](#)
- > [MADS/RDF - JSON](#)
- > [SKOS - RDF/XML](#)
- > [SKOS - N-Triples](#)
- > [SKOS - JSON](#)
- > [MADS/XML](#)
- > [MARC/XML](#)

machine-understandable

- <rdf:RDF>

<rdf:Description rdf:about="http://id.loc.gov/authorities/subjects/sh95000541">

<rdf:type rdf:resource="http://www.w3.org/2004/02/skos/core#Concept"/>

<skos:prefLabel xml:lang="en">World Wide Web</skos:prefLabel>

Concept

- <skosxl:altLabel>

- <rdf:Description>

<rdf:type rdf:resource="http://www.w3.org/2008/05/skos-xl#Label"/>

<skosxl:literalForm xml:lang="en">W3 (World Wide Web)</skosxl:literalForm>

</rdf:Description>

</skosxl:altLabel>

- <skosxl:altLabel>

- <rdf:Description>

<rdf:type rdf:resource="http://www.w3.org/2008/05/skos-xl#Label"/>

<skosxl:literalForm xml:lang="en">Web (World Wide Web)</skosxl:literalForm>

</rdf:Description>

</skosxl:altLabel>

- <skosxl:altLabel>

- <rdf:Description>

<rdf:type rdf:resource="http://www.w3.org/2008/05/skos-xl#Label"/>

<skosxl:literalForm xml:lang="en">World Wide Web (Information retrieval system)</skosxl:literalForm>

</rdf:Description>

</skosxl:altLabel>

- <skosxl:altLabel>

- <rdf:Description>

<rdf:type rdf:resource="http://www.w3.org/2008/05/skos-xl#Label"/>

<skosxl:literalForm xml:lang="en">WWW (World Wide Web)</skosxl:literalForm>

</rdf:Description>

</skosxl:altLabel>

<skos:broader rdf:resource="http://id.loc.gov/authorities/subjects/sh88002671"/>

Preferred label

Alternative labels

Preview

```
<skos:broader rdf:resource="http://id.loc.gov/authorities/subjects/sh92002381"/>
<skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh2007008317"/>
<skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh2002000569"/>
<skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh2008009697"/>
<skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh97003254"/>
<skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh2003001415"/>
<skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh2007008319"/>
<skos:related rdf:resource="http://id.loc.gov/authorities/subjects/sh92002816"/>
<skos:exactMatch rdf:resource="http://aims.fao.org/aos/agrovoc/c_36891"/>
<skos:exactMatch rdf:resource="http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb13319953j"/>
<skos:inScheme rdf:resource="http://id.loc.gov/authorities/subjects"/>
```

Broader
and
narrower
concepts

Matched
concepts in
other
vocabularies

```
+ <skos:changeNote></skos:changeNote>
- <skos:changeNote>
  - <cs:ChangeSet>
    <cs:subjectOfChange rdf:resource="http://id.loc.gov/authorities/subjects/sh95000541"/>
    - <cs:creatorName>
      Library of Congress, Network Development and MARC Standards Office
    </cs:creatorName>
    <cs:createdDate rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2001-10-01T09:56:06</cs:createdDate>
    <cs:changeReason rdf:datatype="http://www.w3.org/2001/XMLSchema#string">revised</cs:changeReason>
  </cs:ChangeSet>
</skos:changeNote>
</rdf:Description>
</rdf:RDF>
```

```
<skos:altLabel xml:lang="en">W3 (World Wide Web)</skos:altLabel>
<skos:altLabel xml:lang="en">Web (World Wide Web)</skos:altLabel>
<skos:altLabel xml:lang="en">World Wide Web (Information retrieval system)</skos:altLabel>
<skos:altLabel xml:lang="en">WWW (World Wide Web)</skos:altLabel>
```

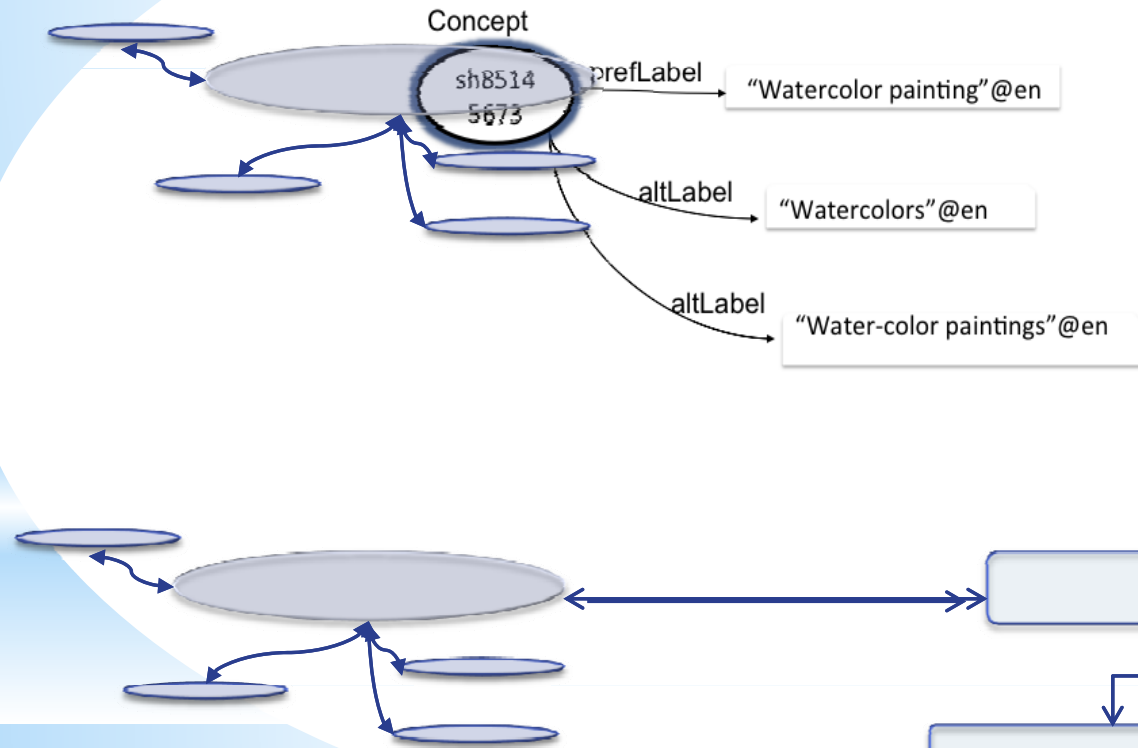
Another way
to express
alternative
labels
(SKOS, not
SKOSXL)

```
6:06</cs:createdDate>
Reason>
```

```
<skos:changeNote>
</rdf:Description>
</rdf:RDF>
```

Two models in implementations

Concepts ←-----> Labels



SKOS (Core)
- labels are properties of Concept

SKOS + SKOSXL
- 'Label' is a Class

- Humans: a web interface is provided with search capability for individual vocabulary values. It supports instant download of the metadata for the value with a choice of serializations.
- Machines: request the URI of interest over HTTP. For example, to access the data value "World Wide Web" in the Library of Congress Subject Headings, one would request this URI:

<http://id.loc.gov/authorities/subjects/sh95000541>

- When requesting this URI, machines have mechanisms for specifying how they want to serialize the data they wish to access. These include common RDF serializations carrying SKOS metadata, and Javascript Object Notation (JSON).

<http://id.loc.gov/about/>

How it works

Bulk Download Formats

Chrome File Edit View History Bookmarks Window Help Thu 9:22 PM ZENG, MARCIA

Library of Congress Subject | x
datahub.io/dataset/lcsh

the Data Hub — The easy way to get, use and share data
ckan Search Groups About Login Find datasets

Library of Congress Subject Headings

View Resources (3) Related (0) History Follow

LCSH has been actively maintained since 1898 to catalog materials held at the Library of Congress. By virtue of cooperative cataloging other libraries around the United States also use LCSH to provide subject access to their collections. In addition LCSH is used internationally, often in translation.

Views: 1079
License: Other (Public Domain)
[OPEN DATA](#)

Resources

- LCSH SKOS (ntriples) application/x-ntriples
- LCSH SKOS (rdf/xml) application/rdf+xml
- RDF/XML example example/rdf+xml

Additional Information

Tags

- bibliographic format-rd
- format-skos library
- no-license-metadata
- no-proprietary-vocab
- no-provenance-metadata
- no-vocab-mappings pu
- published-by-producer

LC's API for individual data retrieval

Known-label retrieval

If you have a known label or heading but are unsure of its URI, it is possible to arrive at the true URI by using the label functionality provided in the LC Linked Data Service. For instance, if your label or heading is "Orchids", use this URI to obtain a HTTP 302 FOUND message with a redirection to the established URI:

- <http://id.loc.gov/authorities/label/orchids>
- <http://id.loc.gov/vocabulary/preservationEvents/label/creation>

The URI syntax for the label functionality is to use the token "label/", followed by a case-insensitive string for the search term.

- `http://id.loc.gov/authorities/{scheme_name}/label/{term}`
- or
- `http://id.loc.gov/vocabulary/{vocabulary_name}/label/{term}`

<http://id.loc.gov/techcenter/searching.html>

Bulk Download and Individual Searches

Chrome File Edit View History Bookmarks Window Help Thu 9:23 PM ZENG, MARCIA

Lista de Encabezamientos de Materia as Linked Open Data

View Resources (8) Related (0) History Followers (0)

Este nuevo recurso informático que la Dirección General de Libro, Archivos y Bibliotecas pone a disposición del ciudadano supone un importante avance tecnológico puesto que implica la transformación de la Lista de Encabezamientos de Materia (LEM) al Simple Knowledge Organization System SKOS, uno de los pilares del Linked Open Data y de su adaptación a Europea como uno de los namespaces constitutivos del European Data Model. Se ha establecido además, siempre que ha sido posible, un skos:closeMatch con los LCSH y se está progresando para proporcionar una funcionalidad análoga con RAMEAU o SWD. Incorpora además un fichero en zip de los registros MARC de autoridades de materia, es decir aquellos basados en el campo 150 en los que se ha añadido las URI de las LEM y las del LCSH.

Views: 421
License: License Not Specified

Tags

- bibliographic
- format-rdf
- format-skos
- lem
- library
- linkeddata
- lid
- lod
- no-license-metadata
- no-proprietary-vocab
- provenance-metadata
- publications
- published-by-producer
- void-sparql-endpoint

Groups

- Library Linked Data
- Linking Open Data Cloud

Resources

- SPARQL Endpoint 19 api/sparql
- Zipped RDF/XML file (Full ontology) 13 application/zip
- Zipped MARC 21 authorities file 7 application/marc
- Arquitectura Musulmana / Islamic Architecture (example deref... 16 example/rdf+xml
- Arquitectura Musulmana / Islamic Architecture (Turtle exampl... 3 example/turtle
- Esquema General de Encabezamientos de Materia (example deref... 13 example/rdf+xml
- Faceted Browser 7 text/html
- Semantic Web Sitemap 5 meta/sitemap

British Museum Sparql Endpoint

Example Queries

Enter your query here:

Syntax

```
PREFIX id: <http://collection.britishmuseum.org/id/>
PREFIX idObj: <http://collection.britishmuseum.org/id/object/>
PREFIX thes: <http://collection.britishmuseum.org/id/thesauri/>
PREFIX crm: <http://collection.britishmuseum.org/id/crm/>
PREFIX bmx: <http://collection.britishmuseum.org/id/crm/bm-extensions/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX eg: <http://www.example.com/>
PREFIX dcterms: <http://purl.org/dc/terms/>
```

```
SELECT * WHERE
{
    ?s ?p ?o
} LIMIT 10
```

Submit

<http://collection.britishmuseum.org/Sparql>

Give a Label ----- > Get the URL of all exact matches
in multiple vocabularies

Example provided by AGROVOC

Given the English preferred label, for example **Japan**, discover the URI and all the exact matches:

```
SELECT ?uri ?em {  
  ?uri skos:prefLabel "Japan"@en .  
  OPTIONAL { <http://aims.fao.org/aos/agrovoc/c_4039> skos:exactMatch ?em } .  
}
```

RESULT:

uri	em
<http://aims.fao.org/aos/agrovoc/c_4039>	<http://www.fao.org/countryprofiles/geoinfo/geopolitical/resource/Japan>
<http://aims.fao.org/aos/agrovoc/c_4039>	<http://eurovoc.europa.eu/1524>
<http://aims.fao.org/aos/agrovoc/c_4039>	<http://lod.nal.usda.gov/nalt/35135>
<http://aims.fao.org/aos/agrovoc/c_4039>	<http://zbw.eu/stw/descriptor/17568-3>
<http://aims.fao.org/aos/agrovoc/c_4039>	<http://lod.gesis.org/thesoz/concept/10048140>
<http://aims.fao.org/aos/agrovoc/c_4039>	<http://dewey.info/class/952/>

<http://aims.fao.org/standards/agrovoc/linked-open-data>

Give the URL <----- get English Preferred labels of all exact matches in multiple vocabularies

Example provided by AGROVOC

SPARQL query examples

Given the URI of a resource, for example http://aims.fao.org/aos/agrovoc/c_4039 discover the English preferred label and all the exact matches:

```
SELECT ?pl ?em {  
  OPTIONAL { <http://aims.fao.org/aos/agrovoc/c\_4039> skos:exactMatch ?em }.  
  <http://aims.fao.org/aos/agrovoc/c\_4039> skos:prefLabel ?pl .  
  FILTER ( (lang(?pl)="en") )}
```

RESULT :

```
PI      em  
"Japan"@e <http://www.fao.org/countryprofiles/geoinfo/geopolitical/resource/Japan>  
"Japan"@en <http://eurovoc.europa.eu/1524>  
"Japan"@en <http://lod.nal.usda.gov/nalt/35135>  
"Japan"@en <http://zbw.eu/stw/descriptor/17568-3>  
"Japan"@en <http://lod.gesis.org/thesoz/concept/10048140>  
"Japan"@en <http://dewey.info/class/952/>
```

<http://aims.fao.org/standards/agrovoc/linked-open-data>

Suggestions to the Getty Vocab Program

In addition to AAT, ULAN, TGN, and CONA

Library of Congress LOD Vocabularies

- LCSH (aboutness)
- LC Genre/Form Terms (isness)
- Thesaurus for Graphic Materials (ofness)
- MARC Country
- MARC Geographic Areas
- LC Name Authority File
- MARC Relator

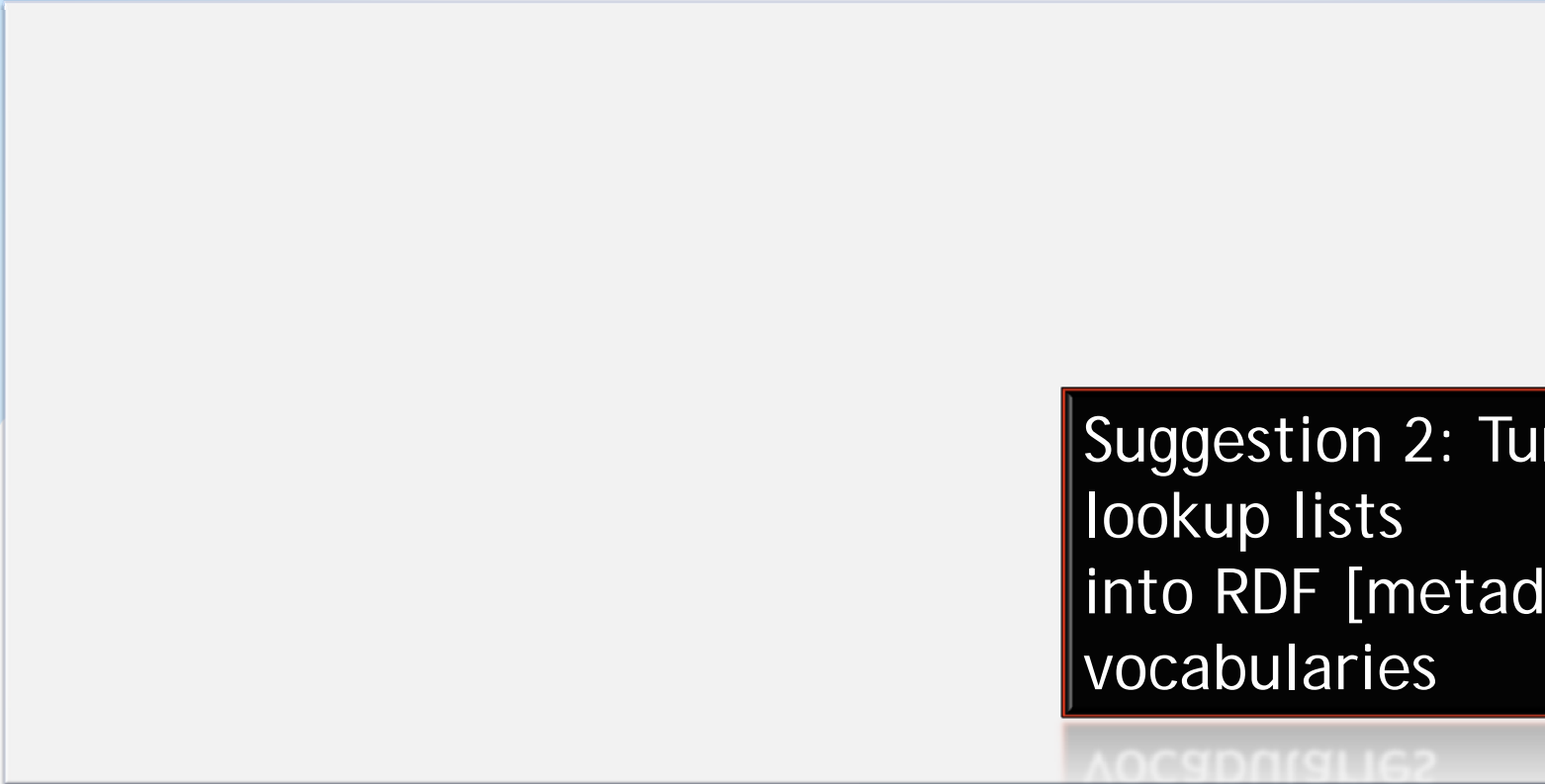
Getty Vocabularies

- AAT
- TGN Nation lookup
- TGN
- ULAN
- ULAN Nationality Lookup
- ULAN Role Lookup
- TGN Place Type Lookup

Suggestion 1: Turn these lookup lists into RDF [value] vocabularies

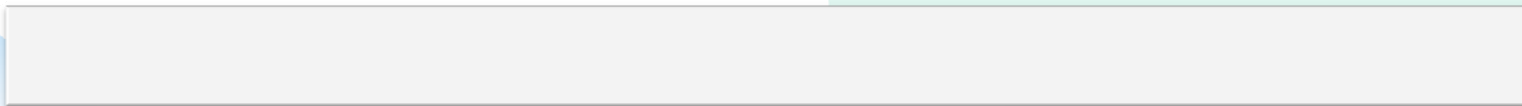
Library of Congress LOD Vocabularies

Getty Vocabularies



Suggestion 2: Turn this
lookup lists
into RDF [metadata]
vocabularies

➤ MARC Relator -----> ➤ ULAN Role Lookup



Why a ROLE vocabulary (to be used as predicates)? Use a VRA record as an example:

index

VRA Core 4 Example 16: Statue [part of larger memorial]

XML

Work record [refid 8]

<u>agent</u>	Daniel Chester French (American sculptor, 1850-1931)
<u>culturalContext</u>	American
<u>date</u>	1914-1920 (creation)
<u>description</u>	[The statue was constructed and carved of 28 blocks of marble by the Piccirilli Brothers studio of Brooklyn, New York.] The over life-size, seated and meditative Abraham Lincoln (1914-1920) for the Lincoln Memorial (marble, dedicated 1922; Washington, DC), French's most famous piece, became a national icon and crowned the artist's long and celebrated career.
<u>inscription</u>	
<u>location</u>	Lincoln Memorial (Washington, District of Columbia, United States) [location note] On the National Mall
<u>material</u>	pedestal and platform for statue: Tennessee marble; statue: white Georgia marble
<u>measurements</u>	5.79 m (height, statue)



image from flickr

Image record [refid 107]

<u>agent</u>	chadh [Flickr account name]
<u>culturalContext</u>	
<u>date</u>	09/24/2008 (creation)

<http://www.vraweb.org/projects/vracore4/example016.html>

Extracted XML data for 'agent'

```
<agentSet>
  <display>French, Daniel Chester (American sculptor, 1850-1931)</display>
  <notes/>
  <agent>
    <name vocab="ULAN" refid="500009434" type="personal">
      French, Daniel Chester </name>
    <dates type="life">
      <earliestDate>1850</earliestDate>
      <latestDate>1931</latestDate>
    </dates>
    <culture>American</culture>
    <role>architect</role>
  </agent>
</agentSet>
```

role of an
agent

Now:

French, Daniel Chester - role - architect

French, Daniel Chester - agent - Abraham Lincoln Statue

Needed:

French, Daniel Chester - architect - Abraham Lincoln
Statue



Union List of Artist Names® Online Role Type Lookup

Click one or more checkboxes, then click the **Return to Search** button.

Click the **Clear** button to clear your selections and start over.

Click the **Cancel** button to discard your choices and return to the search.

[Return to Search](#) [Clear](#) [Cancel](#)

Browse: A B C D E F G H I J K L M N O P Q R S T U V W

- abness
- abbot
- abolitionist
- abstract artist
- academician
- academy
- acrobat
- activist
- actor
- actress
- administrative originator

Suggestion 2: Turn this
lookup lists
into RDF [metadata]
vocabularies

Select from current list

<http://www.getty.edu/vow/ULANRolePopup>

Getty Vocabularies

- CDWA
- CDWA Lite
- ObjectID Checklist
- ...

Suggestion 3: Publish
these schemas as
RDF [metadata]
vocabularies

➤ ULAN Role Lookup

[Join LOV \(metadata hub\) http://lov.okfn.org/dataset/lov/](http://lov.okfn.org/dataset/lov/)

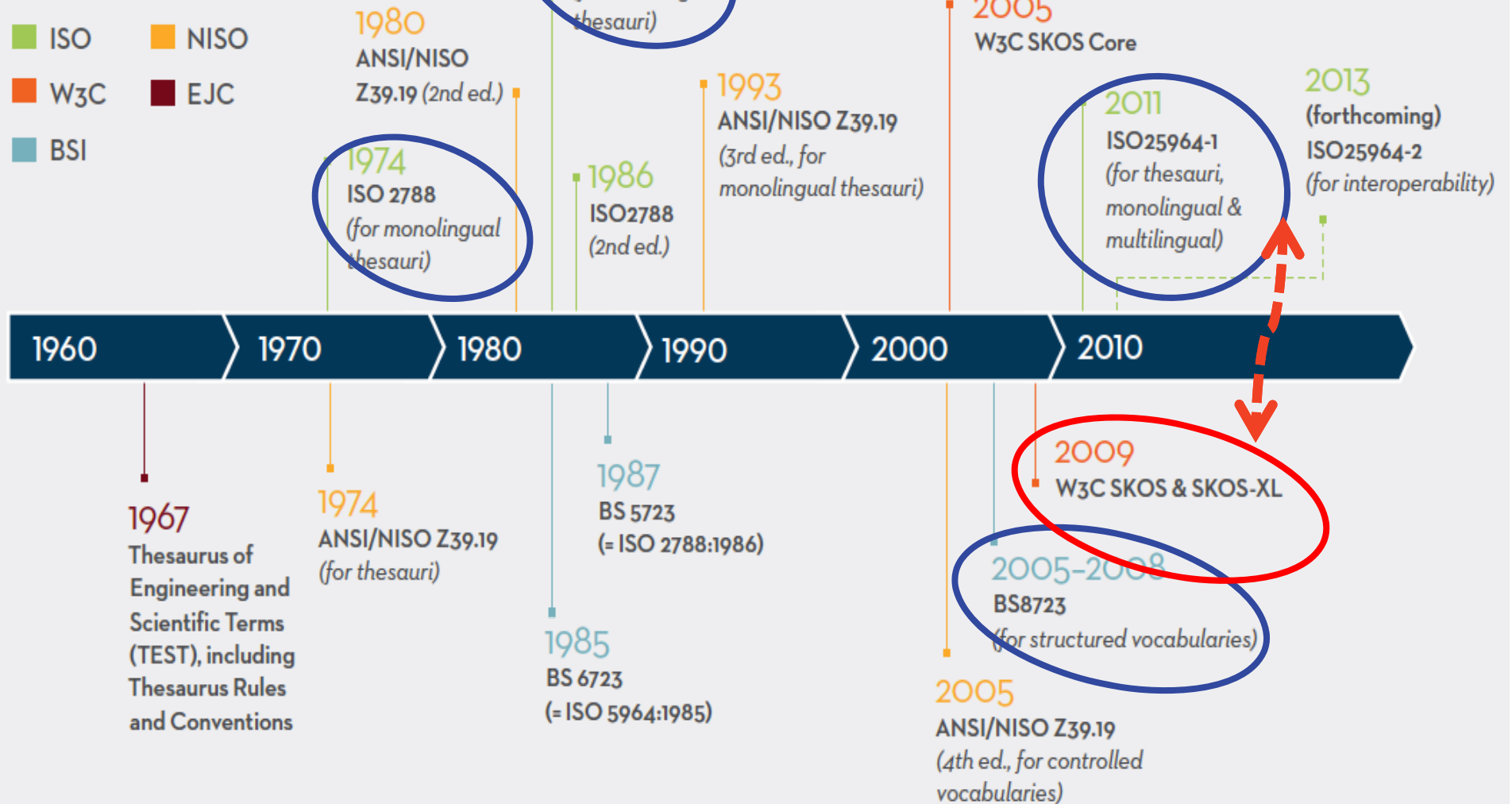
3. Thesaurus data model and alignment with SKOS

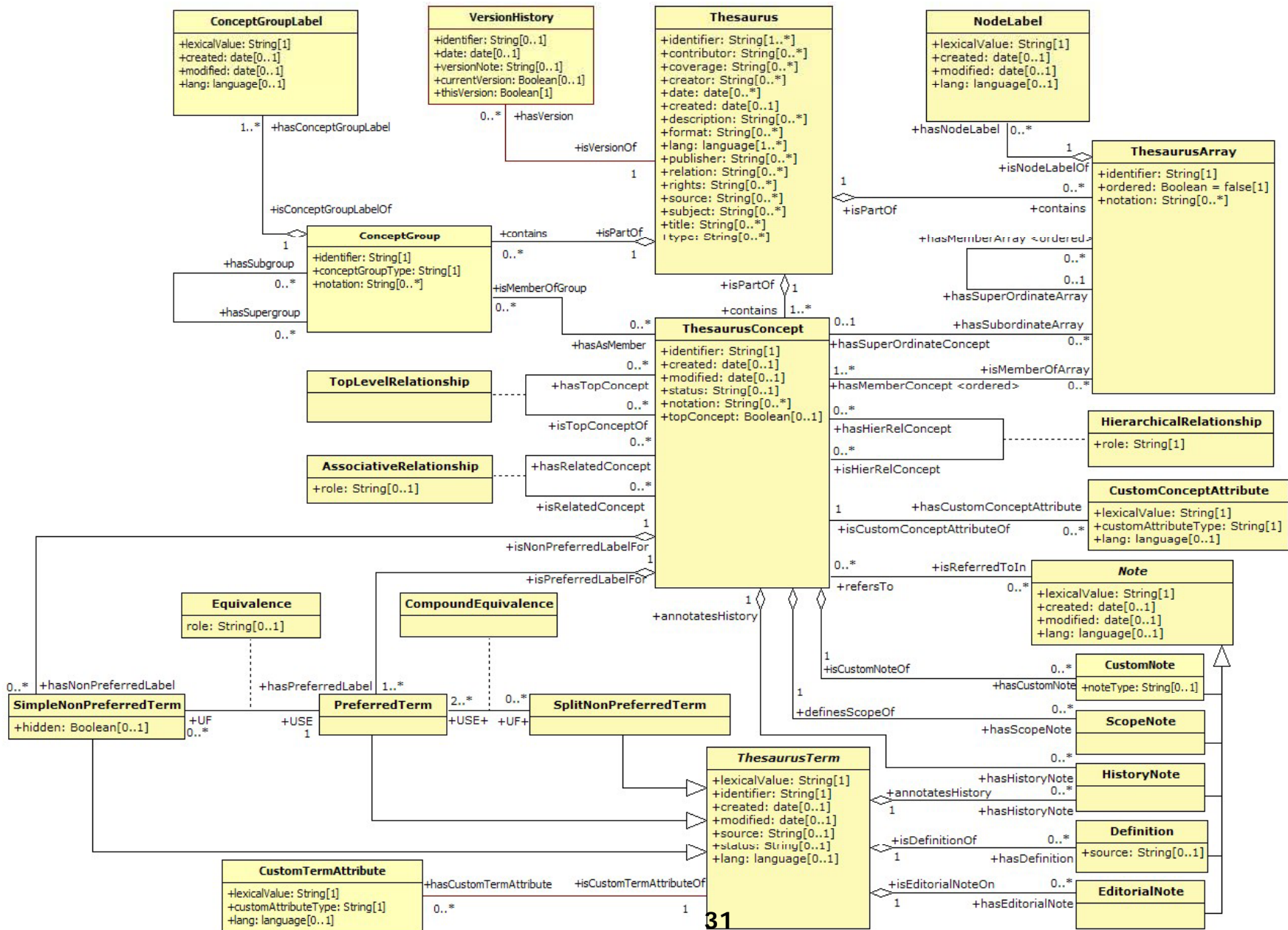
ISO 25964: *Thesauri and interoperability with other vocabularies*

- Part 1: Thesauri for information retrieval
 - Published Aug. 2011
 - Covers monolingual and multilingual thesauri
- Part 2: Interoperability with other vocabularies
 - To be published in 2012, in press now
 - Covers mapping between thesauri and other types of vocabulary

ISO 25964

Timeline of Landmark Thesaurus Standards in the English Language





ISO 25964 data model <-&->SKOS

The ISO 25964 data model is broadly compatible with SKOS

Greater compatibility awaits SKOS extension to allow for:

- version history
- compound equivalence among terms
- use of concept group and of array
- custom extensions
- specific properties of concepts, terms, notes and thesaurus that are not covered in SKOS

This and the following 6 slides are based on "Exchanging ISO 25964-1 thesauri data using RDF, SKOS and SKOS-XL"

Presented by Johan De Smedt, NKOS Workshop 2012 at TPDL

<https://www.comp.gla.ac.uk/pages/research/hypermedia/nkos/nkos2012/programme2012.html>

Align ISO Thesaurus Data Model with SKOS

- **Purpose:** Provide a reference framework facilitating integration and data exchange of ISO 25964 thesaurus data using RDF as a representation language
- **Approach:** Minimal extensions are made, using SKOS, SKOS-XL and Dublin Core where possible
- **Contributors:**
 - ISO TC46 WG 8 - 25964WG:
 - Stella Dextre Clarke, Jutta Lindenthal, Marcia Lei Zeng, Johan De Smedt, Douglas S. Tudhope, Leonard Will
 - Antoine Isaac: Co-Editor of *SKOS Primer* and *MADS/SKOS mapping*

➤ Methodology and Levels of representation compliance

■ Always align with the specified SKOS and SKOS-XL semantics

- SKOS and SKOS-XL semantics are a top level agreement for sharing KOS information

○ SKOS:

- ✧ Not requiring label relations
- ✧ Limited concept relationships

○ SKOS-XL

- ✧ Simple label relations

■ Keep with the iso-25964 proposed extensions patterns

- Compound and simple label relationships, thesaurus evolution, arrays, groups, notes and facets

Methodology

Extracted from the table

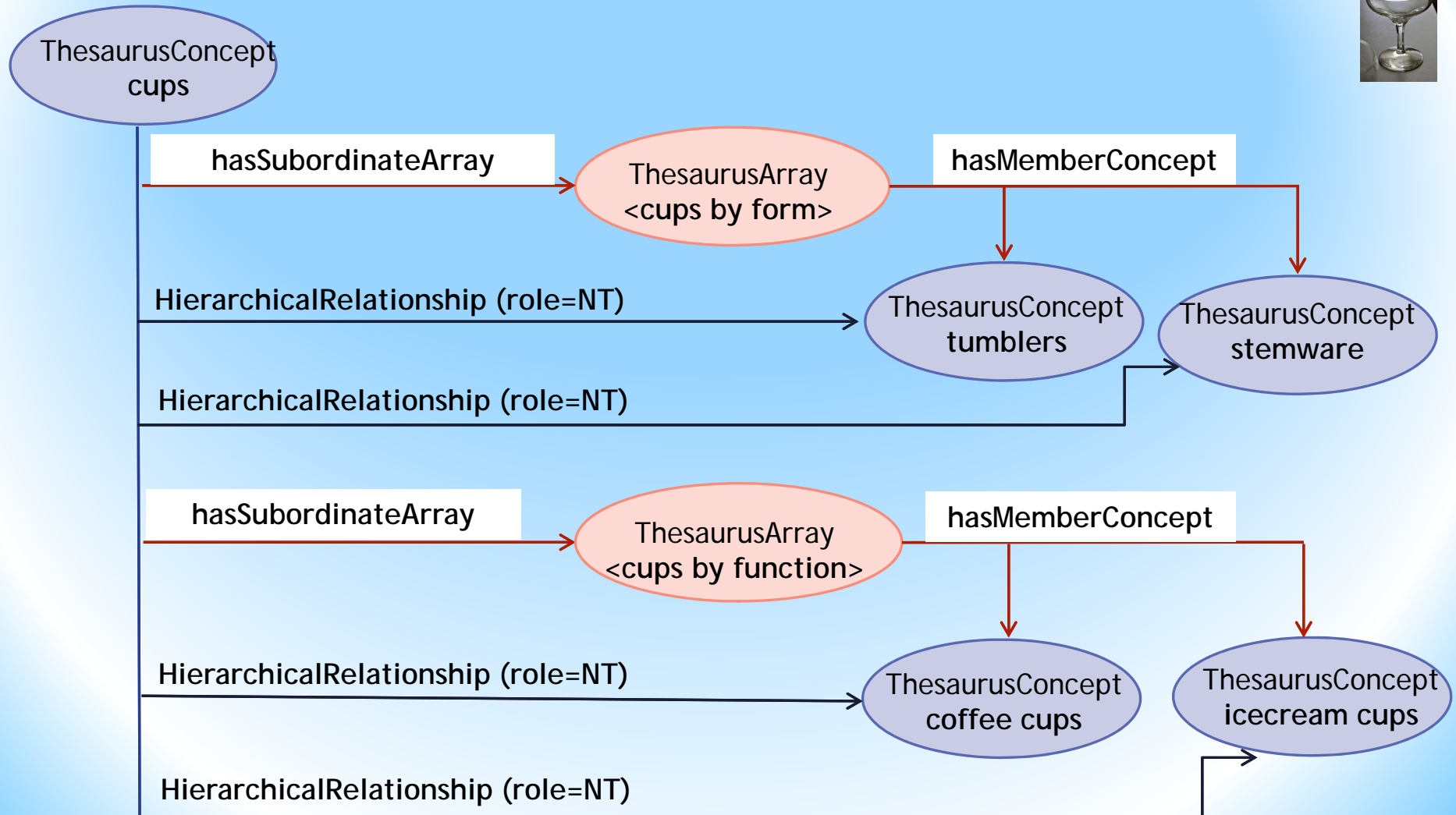
Full table at: <http://www.niso.org/schemas/iso25964/>
<http://www.niso.org/schemas/iso25964/correspondencesSKOS/>

ISO-25964	SKOS/SKOS-XL/extension	Remark
ThesaurusConcept	skos:Concept	
- status	iso-thes:status	Proposed extension
- isPartOf (Thesaurus)	skos:inScheme	
- notation	skos:notation	The datatype of the notation range is set to distinguish different types of notations
ThesaurusConcept[topConcept=true]		Has special attribute mapping (see next 2 rows)
- isPartOf (Thesaurus)	skos:topConceptOf	
- isTopConceptOf (TopLevelRelationship)	Not explicitly mapped. The relationship may be derived (see remark)	sub-properties of skos:narrowerTransitive having the same domain as skos:topConceptOf

ISO-25964	SKOS/SKOS-XL/extension	Remark
ThesaurusTerm	- rdf:PlainLiteral - xl:Label	- preferred simple mapping - extended mapping to handle label relationships
PreferredTerm	iso-thes:PreferredTerm	The restriction of xl:Label to the range of xl:prefLabel is only required for expressing label relations (see CompoundEquivalence)
(ThesaurusConcept) hasPreferredLabel (PreferredTerm)	- skos:prefLabel - xl:prefLabel	
CustomTermAttribute [customAttributeType]	requires xl:Label mapping custom RDF property	The property name depends on the customAttributeType

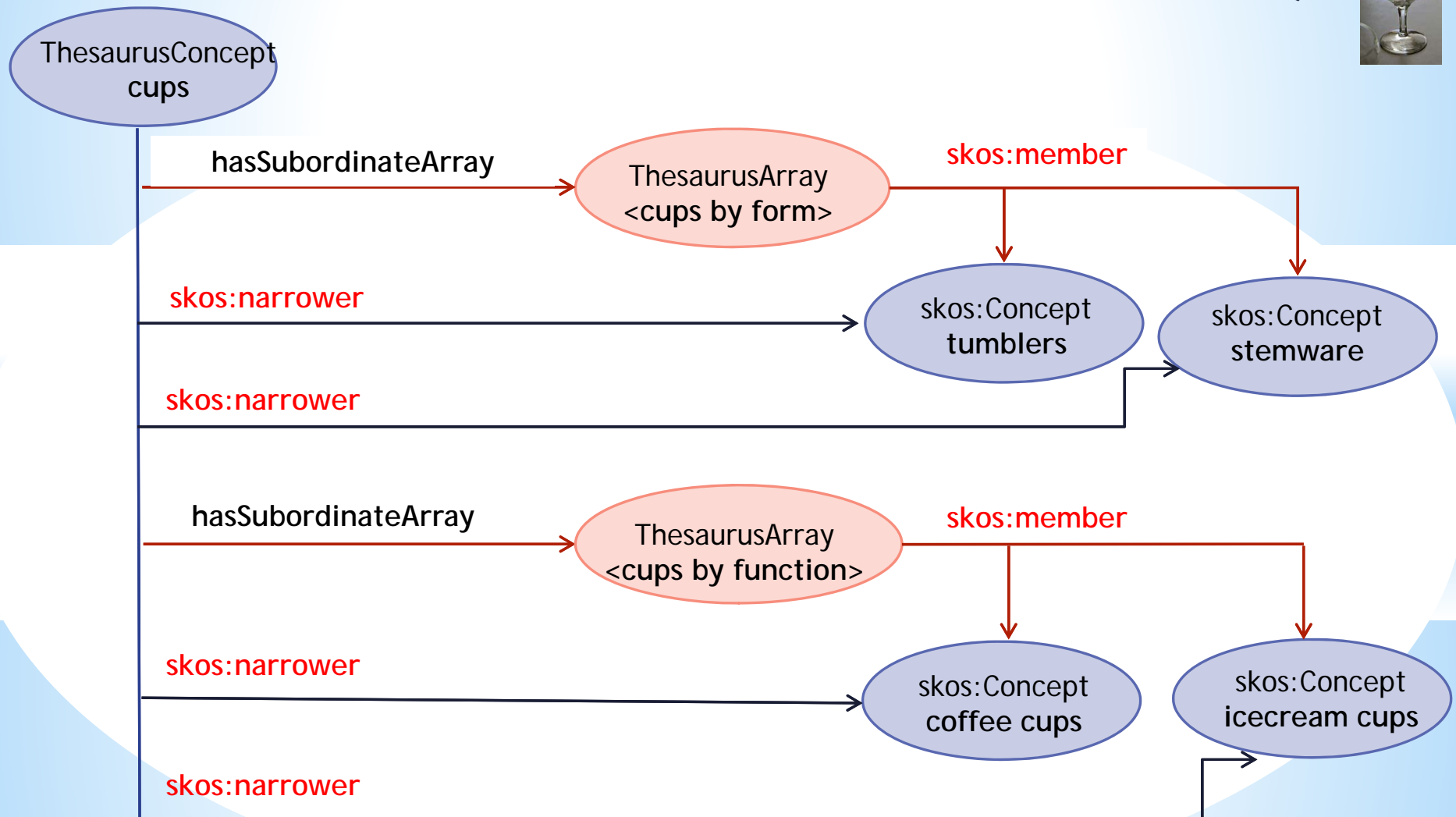
Example: ThesaurusArray

- view in ISO Data Model (example - not ordered)



Example: ThesaurusArray

- view in extended SKOS (example - not ordered)





"Exchanging ISO 25964-1 thesauri data using RDF, SKOS and SKOS-XL"

Presented by Johan De Smedt, NKOS Workshop 2012 at TPDL

<https://www.comp.glam.ac.uk/pages/research/hypermedia/nkos/nkos2012/programme2012.html>

Correspondence between ISO 25964 and SKOS/SKOS-XL models [PDF file]

<http://www.niso.org/schemas/iso25964/>

The Data Hub.

<http://thedatahub.org/>

LC Linked Data Service- Vocabularies and authorities.

<http://id.loc.gov/>

For more details: