ID.LOC.GOV, 1 ½ Years:
Review, Changes, Future Plans, MADS/RDF
http://id.loc.gov
Presentation Outline

**ID.LOC.GOV**
- Mission
- Service Description
- Authorities and Vocabularies Offered, Present and Future
- How it's used

**MADS/RDF**
- Linked Library Data Activities
- SKOS as Metadata Model/Format
- MADS/RDF, by Design
  - MADS/XML
  - Pre-coordinated headings
  - Library-specific Authority types
  - Label parts
  - Deleted headings
ID: What is it?

ID makes LC owned or maintained authorities and vocabularies available as Linked Data.
Available Authorities and Vocabularies

Library of Congress Subject Headings (LCSH)
Thesaurus of Geographic Materials
MARC Code List for Relators
Cryptographic Hash Functions
Preservation Events
Preservation Level Role

Coming Soon:

Countries
Geographic Areas
Languages (ISOs 639-1, 639-2, 639-5, MARC list)
More PREMIS vocabularies
ID: What is it?

Art, Renaissance

From Library of Congress Subject Headings

Details | Visualization | Suggest Terminology

Art, Renaissance
URI
<http://id.loc.gov/authorities/sh85007860#concept>

Type
Topical Term

Alternate Labels
Art, Renaissance--Europe
Renaissance art

Narrower Terms
Little masters (Artists)

Created
2002-10-29

Modified
2002-12-04 10:03:10

Similar concepts from other vocabularies
<http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb1l952475c>

Instance Of
SKOS Concept

Alternate Formats
RDF/XML
N-Triples
JSON
ID: What's Offered

Data

All data in RDF (Resource Description Framework) format
All data in SKOS (Simple Knowledge Organization System) RDF
All data available in bulk download

All records available individually via content negotiation
XHTML/RDFa
RDF/XML
N-Triples
JSON
### ID: How it's used

**Ethan Gruber, University of Virginia**

Data used in cataloging application  
Indexed with Solr (Lucene)  
XForms application with autosuggest feature  
Data loaded locally – harvested weekly
National Library Sweden

Unreleased/published Linked Data component of catalog
Links to LCSH

Swedish subject heading: "Smörgåsbord"

Broader terms
- Buffémat
- Matlagning Sverige

Related terms
- Smårätter

LCSH:
- Buffets (Cookery)

misc.
- text/rdf+n3
- application/rdf+xml
- OpenLink RDF browser

http://id.loc.gov/authorities/sh85017647
ID: How it's used

RAMEAU

Part of MACS (Multi-lingual Access to Subjects) project
Determined skos:closeMatch resources between RAMEAU and LCSH
Both RAMEAU and LCSH cross linked

<table>
<thead>
<tr>
<th>Concept information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>URI</strong></td>
</tr>
<tr>
<td><strong>prefLabel</strong></td>
</tr>
</tbody>
</table>

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<tr>
<th>Mappings (simple SKOS statements)</th>
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<tr>
<td>Mapping Relation</td>
</tr>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Mappings (OAEI cells)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept as left hand side</td>
</tr>
<tr>
<td><strong>URI</strong></td>
</tr>
<tr>
<td><a href="http://id.loc.gov/authorities/sh85014310#concept">http://id.loc.gov/authorities/sh85014310#concept</a></td>
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</tr>
</thead>
<tbody>
<tr>
<td>prefLabel</td>
<td>x-notation FRBNF119328898</td>
</tr>
<tr>
<td>fr</td>
<td>Oiseaux</td>
</tr>
</tbody>
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Similar concepts from other vocabularies

> [http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb11932889r](http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb11932889r)

Mappings (simple SKOS statements)

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<th>Mapping Relation</th>
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</tr>
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</table>

Mappings (OAIE cells)

<table>
<thead>
<tr>
<th>URI</th>
<th>Link to details</th>
<th>prefLabel</th>
<th>Mapping Relation</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://id.loc.gov/authorities/sh85014310#concept">http://id.loc.gov/authorities/sh85014310#concept</a></td>
<td>details</td>
<td><a href="http://id.loc.gov/authorities/sh85014310#concept">http://id.loc.gov/authorities/sh85014310#concept</a></td>
<td><a href="http://www.w3.org/2004/02/skos/core#closeMatch">http://www.w3.org/2004/02/skos/core#closeMatch</a></td>
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Linked Data Projects

- LC's ID service, naturally
- British Library making data available in RDF.
- British Library exploring Linked (Bibliographic) Data
- Bibliotheque Nationale de France exploring Linked Data issues
- OCLC, notably hosting and coordinating VIAF
- National Library of Sweden
- Deutsche Nationalbibliothek
  - Recently published authority data as Linked Data
  - Created some new properties to help describe the data
- W3C Working Group exploring Library Linked Data

...and many more
SKOS

- Simple Knowledge Organization System
- W3C Recommendation (9 August 2009)
- An RDF application specifically created for publishing and sharing thesauri, authority, and vocabulary data for use as Linked Data and within the Semantic Web framework.

Example:

- L Rice → skos:prefLabel
- UF Paddy → skos:altLabel
- BT Cereals → skos:broader
- BT Plant products → skos:broader
- NT Brown rice → skos:narrower
- RT Rice straw → skos:related
SKOS

**SKOS, challenges**

- SKOS intentionally *Simple* (augmented with DC properties)
- No support for pre-coordinated headings
- SKOS is lossy

**skos:preLabel**
Europe – Description and Travel – Early Works to 1800

**skos:altLabel**
Europe – Description and travel – 17th century
Europe – Description and travel – 17th-18th centuries
Europe – Description and travel – 18th century
Europe – Description and travel – To 1600
SKOS, challenges

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skos:preLabel
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```

```
skos:altLabel
Europe – Description and travel – 17th century
Europe – Description and travel – 17th-18th centuries
Europe – Description and travel – 18th century
Europe – Description and travel – To 1600
```

Each part of the pre-coordinated heading *could* be its own Authority record.
MADS/RDF

Highlights
An RDF vocabulary better suited to LIS needs
MADS XML → MADS RDF
  MADS XML designed for LIS data
Motivations:
  Better support for complex headings
  Support for Library-specific Authority types
  Support for the parts of labels
  Support for handling deleted headings
Will be mapped to SKOS to ensure interoperability
ID.LOC.GOV will continue to provide data in SKOS RDF
But also MADS/RDF
From MADS/XML  [Metadata Authority Description Schema]

MADS/XML initially released April 23, 2005
Originally designed to support MARC21 Authority data
  E.g. pre-coordinated headings supported
Consistency with MODS was a design goal

```xml
<nds:authority>
  <mads:geographic authority="lcsh">Europe</mads:geographic>
  <mads:topic>Descriptive and travel</mads:topic>
  <mads:genre>Early works to 1800</mads:genre>
</nds:authority>
<nds:variant>
  <mads:geographic>Europe</mads:geographic>
  <mads:topic>Descriptive and travel</mads:topic>
  <mads:temporal>To 1600</mads:temporal>
</nds:variant>
<nds:variant>
  <mads:geographic>Europe</mads:geographic>
  <mads:topic>Descriptive and travel</mads:topic>
  <mads:temporal>17th century</mads:temporal>
</nds:variant>
```
MADS/RDF, Pre-coordinated headings

- <Authority rdf:about="http://id.loc.gov/authorities/lcsht/csh02005862">
  <rdf:type rdf:resource="http://id.loc.gov/ontologies/mads/2010/11#ComplexSubject"/>
- <authoritativeLabel>Europe: Description and travel—Early works to 1800</authoritativeLabel>
- <componentList rdf:parseType="Collection">
  - <Authority rdf:nodeID="aEurope">
    <rdf:type rdf:resource="http://id.loc.gov/ontologies/mads/2010/11#Geographic"/>
    <authoritativeLabel>Europe</authoritativeLabel>
    - <elementList rdf:parseType="Collection">
      - <GeographicElement>
        <elementValue>Europe</elementValue>
      </GeographicElement>
    </elementList>
  </Authority>
  - <Authority rdf:nodeID="aDescriptionandtravel">
    <authoritativeLabel>Description and travel</authoritativeLabel>
    - <elementList rdf:parseType="Collection">
      - <TopicElement>
        <elementValue>Description and travel</elementValue>
      </TopicElement>
    </elementList>
  </Authority>
  - <Authority rdf:nodeID="aEarlyworksto1800">
    <rdf:type rdf:resource="http://id.loc.gov/ontologies/mads/2010/11#GenreForm"/>
    <authoritativeLabel>Early works to 1800</authoritativeLabel>
    - <elementList rdf:parseType="Collection">
      - <GenreFormElement>
        <elementValue>Early works to 1800</elementValue>
      </GenreFormElement>
    </elementList>
  </Authority>
</componentList>
MADS/RDF, Pre-coordinated headings

- <Authority rdf:about="http://id.loc.gov/authorities/lcsh/sh92005862">
  <rdf:type rdf:resource="http://id.loc.gov/ontologies/mads/2010/11#ComplexSubject"/>
  <authoritativeLabel>Europe--Description and travel--Early works to 1800</authoritativeLabel>
  <componentList rdf:parseType="Collection">
    <Authority rdf:about="http://id.loc.gov/authorities/lcsh/sh92005862">
      <rdf:type rdf:resource="http://id.loc.gov/ontologies/mads/2010/11#ComplexSubject"/>
      <authoritativeLabel>Europe</authoritativeLabel>
      <elementList rdf:parseType="Collection">
        <GeographicElement>
          <elementValue>Europe</elementValue>
        </GeographicElement>
      </elementList>
    </Authority>
  </componentList>
</Authority>
MADS/RDF, Pre-coordinated headings

RDF Lists used to
1) Order the headings
2) Establish the end of the list
MADS/RDF

Specific Authority Types

MADS/XML already supported most (with greater specificity accomplished via XML attributes and additional elements)
- Name (Personal, Corporate, etc.)
- Title
- Temporal
- Topic
- Genre
- Geographic
- HierarchicalGeographic
- Occupation

MADS/RDF adds: NameTitle, ComplexSubject, and a number of Geographic areas (City, County, State, Region, Extraterrestrial Area, etc.)
Specific Authority Types

MADS/XML already supported most (with greater specificity accomplished via XML attributes and additional elements)

- Name (Personal, Corporate, etc.)
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MADS/RDF adds:
- NameTitle
- ComplexSubject
- Geographic areas (City, County, State, Region, Extraterrestrial Area, etc.)
MADS/RDF

Deleted Records / Deprecated Terms

From Cookery to Cooking

URI for Cookery: http://id.loc.gov/authorities/sh85031766#concept

Result:

SKOS/RDF can place deletion information in note field (providing deleted entries remained in system – they don't)
ID using ChangeSet RDF vocabulary
Deleted Records / Deprecated Terms

Data can't, and shouldn't, just disappear in a Linked Data environment. Evidentiary

Redirection is a possibility, but

1) Sometimes a term is replaced by two new terms
2) Information could be in the data, but if not, then
3) System becomes a data carrier

For MADS/RDF

1) Authority changes to Variant
2) Presence of mads:hasLaterEstablishedForm points to new, preferred term(s)
3) RecordInfo will note status of data
Deleted Records / Deprecated Terms

```xml
- <rdf:RDF>
  [ - <Variant rdf:about="http://id.loc.gov/authorities/lcsh/sh85031766">
      <variantLabel>Cookery</variantLabel>
    ]
    - <elementList rdf:parseType="Collection">
      - <TopicElement>
        <elementValue>Cookery</elementValue>
      </TopicElement>
    </elementList>
  <hasLaterEstablishedForm rdf:resource="http://id.loc.gov/authorities/lcsh/sh2010008400"/>
  <hasLaterEstablishedForm rdf:resource="http://id.loc.gov/authorities/lcsh/sh2010007517"/>
  - <adminMetadata>
    - <ri:RecordInfo>
      <ri:recordCreationDate rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">1986-12-09T00:00:00:00</ri:recordCreationDate>
      <ri:recordStatus rdf:datatype="http://www.w3.org/2001/XMLSchema#string">deleted</ri:recordStatus>
      <ri:recordContentSource rdf:resource="http://id.loc.gov/vocabulary/organizations/dlc"/>
      <ri:recordChangeDate rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2010-07-15T11:20:17-04:00</ri:recordChangeDate>
    </ri:RecordInfo>
  </adminMetadata>
</Variant>
</rdf:RDF>
```
MADS Scheme and MADS Collections

Similar to skos:ConceptScheme and skos:Collection
mads:Collections and mads:Schemes can be linked directly
Means to organize authority descriptions
MADS Scheme and MADS Collections

Similar to skos:ConceptScheme and skos:Collection, mads:Collections and mads:Schemes can be linked directly. This means to organize authority descriptions.

```
<rdf:RDF>
  <Authority rdf:about="http://id.loc.gov/authorities/lcsh/sh2002012010">
    <authoritativeLabel>Sources</authoritativeLabel>
    <isAuthorityIn rdf:resource="http://id.loc.gov/authorities/lcsh"/>
    <isMemberOf rdf:resource="http://id.loc.gov/authorities/lcsh/collection_TopicalSubdivisions"/>
    <isMemberOf rdf:resource="http://id.loc.gov/authorities/lcsh/collection_LCSH_General"/>
    <isMemberOf rdf:resource="http://id.loc.gov/lcsh/collection_PatternHeadingH1095"/>
    <isMemberOf rdf:resource="http://id.loc.gov/lcsh/collection_PatternHeadingH1110"/>
    <isMemberOf rdf:resource="http://id.loc.gov/lcsh/collection_PatternHeadingH1156"/>
  </Authority>
</rdf:RDF>
```
Thank You

Questions?
Comments?

Public review: Within two weeks
ID Listserv: http://listserv.loc.gov/cgi-bin/wa?SUBED1=ID&A=1
(also available from Contact Us page)