RDA and Linked Data

by Gordon Dunsire
National Seminar,
National Library of Finland,
Helsinki, Finland, 25 March 2014
Based on RDA and the Semantic Web: Lectio magistralis in Library Science, Florence University, Florence, Italy 4th March, 2014
Functional Requirements for Bibliographic Records

User tasks

Content attributes

Carrier attributes

Work
Expression
Manifestation
Item

JSC, 2005

AACR3 Item

RES OURCE DESCRIPTION & ACCESS
Semantic Web (Berners-Lee)

Structured collections of information + Sets of inference rules

Automated reasoning

Web of linked data

Web of linked documents

Web of linked computing devices
Data vs Ontology

- ex: “This work”
- ex: “has author”
- ex: Gordon Dunsire
- Data triple
- URI
- ex: hasAuthor
- ex: “has label”
- “has author”
- Ontology triple
- ex: “has type”
- “Property”
Inference rules: sub-property

```
ex: Property1

ex: “has label”

ex: “is sub-property of”

ex: Property2

ex: “has label”

“has author”@en

“has creator”@en

+ ex: “This work”

“has author”

“Gordon Dunsire”

ex: “This work”

“has creator”

“Gordon Dunsire”
```
RDF vocabularies: DCT + RDFS

Dublin Core Terms + RDF Schema

- **dcterms:creator**
  - rdfs:label: "Creator"
  - rdfs:range: Agent
  - rdfs:comment: "A resource that acts or has the power to act."

- **dcterms:Agent**
  - rdfs:label: "Agent"
  - rdfs:comment: "A resource that acts or has the power to act."

Source of URIs
Inference rules: range

dcterms:creator rdfs:range dcterms:agent

ex: "This work" dcterms:creator ex: Gordon Dunsire

ex: Gordon Dunsire rdfs:type dcterms:Agent
Benefits expected from London 2007 meeting

- The library community gets a metadata standard that is compatible with the Web Architecture and that is fully interoperable with other Semantic Web initiatives.
- The DCMI community gets a libraries application profile firmly based on the DCAM and FRBR (which will be a high profile exemplar for others to follow).
- The Semantic Web community get a significant pool of well thought-out metadata terms to re-use.
- There is wider uptake of RDA.
Activities 2007-

- Development of an RDA Element Vocabulary
- Development of an RDA DC Application Profile based on FRBR and FRAD
- Disclosure of RDA Value Vocabularies using RDF/RDFS/SKOS
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<thead>
<tr>
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<th>URI</th>
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<th>Actions</th>
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<td>Published</td>
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<tr>
<td>still image</td>
<td></td>
<td>Published</td>
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<td></td>
<td>Published</td>
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</table>

Opaque URI (only for machines)
Compact URI = rdact:1010

23 results
**Vocabulary: RDA Content Type**

**Concepts:** notated music

<table>
<thead>
<tr>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preferred Label:</strong></td>
</tr>
<tr>
<td><strong>Language:</strong></td>
</tr>
<tr>
<td><strong>URI:</strong></td>
</tr>
<tr>
<td><strong>Top Concept?:</strong></td>
</tr>
<tr>
<td><strong>Status:</strong></td>
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**Properties**

<table>
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<tr>
<th>scope note</th>
<th>Includes all forms of music notation other than those intended to be perceived through touch (see tactile notated music).</th>
<th>English</th>
<th>Published</th>
</tr>
</thead>
<tbody>
<tr>
<td>scope note</td>
<td>Dazu gehören alle Formen der notierten Musik, außer derjenigen, die konzipiert wurde, um über den Tastsinn wahrgenommen zu werden.</td>
<td>German</td>
<td>New-Proposed</td>
</tr>
<tr>
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<td>computer dataset</td>
<td>New-Proposed</td>
<td></td>
</tr>
<tr>
<td>related to</td>
<td>tactile notated music</td>
<td>New-Proposed</td>
<td></td>
</tr>
<tr>
<td>preferred label</td>
<td>notated music</td>
<td>English</td>
<td>Published</td>
</tr>
<tr>
<td>preferred label</td>
<td>schriftlich fixierte Musik</td>
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<tr>
<td>definition</td>
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<td>Published</td>
</tr>
<tr>
<td>definition</td>
<td>Inhalt, der durch ein Notationssystem für Musik ausgedrückt wird und konzipiert wurde, um visuell wahrgenommen zu werden.</td>
<td>German</td>
<td>New-Proposed</td>
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  <skos:prefLabel xml:lang="de">schriftlich fixierte Musik</skos:prefLabel>
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  <skos:definition xml:lang="de">Inhalt, der durch ein Notationssystem für Musik ausgedrückt wird und konzipiert wurde, um visuell wahrgenommen zu werden.</skos:definition>
</skos:Concept>
DCAM and RDA

Dublin Core Abstract Model

Basic RDA metadata structures

e.g vocabulary encoding scheme

ex: ExpressionURI

rdae: “has content type”

rdact: 1010

rdfs:label

“notated music”@en

skos:inScheme

rdaterms: RDACContentType
High-level metadata structures

Constrained by FRBR (domain)

Unconstrained

rdac: "Manifestation"

rdfs: "domain"

rdam: "has title"

rdfs: "domain"

rdam: "has title proper"

rdfs: "domain"

rdau: "has title"

rdau: "has title proper"

sP = rdfs:"sub-property of"
Relationship designators

rdac: “Work”

rdfs: “domain”

rdaw: “has creator”

sP

rdfs: “range”

rdac: “Agent”

rdau: “has designer”

rdau: “has creator”

sP

sP = rdfs:”sub-property of”
## Link-ability

<table>
<thead>
<tr>
<th>Entity</th>
<th>Properties</th>
<th>Range</th>
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<tbody>
<tr>
<td>Work</td>
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<td>Agent</td>
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</tr>
</tbody>
</table>

- **Domains**: Triple clusters
- **Relationships**: Triple chains
- **Attributes**: Covering all media

**Literals**
Rich detail

- rdaw: “is video screenplay (work)”
- rdaw: “is screenplay (work)”
- rdaw: “is complemented by (work)”
- rdaw: “has accompanying work relationship with”
- rdaw: “has related work”

sub-property ladder
Interoperability

rdau: “has creator”

rdau: “has performer”

rdau: “has actor”

rdau: “has voice actor”

rdaw: “has creator”

???

dc: “creator”

dcterms: “creator”
To do (from 2007 ...)

- Publish more RDA value vocabularies
- Develop cross-entity elements
  - E.g. Work-Expression relationship designators
- Develop Application Profile for RDA “core”
- Develop RDF elements for aggregated statements (RDA, ISBD, MARC, ...)
  - E.g. Place of publication -> Publication statement
To do (from now)

- More machine-actionability (internal)
  - Extent
  - Place
  - RDA/ONIX Framework
- Maps to related linked data elements (external)
  - RDA->MARC 21 relators ✔
  - ISBD->RDA ✔
  - RDA-BIBFRAME ?
  - RDA-FRBR !
- What is an RDA record?
Achievements: 5+ years on

- Rich set of elements and value vocabularies for “bibliographic control”
  - At global, “universal” level
- “a metadata standard that is compatible with the Web Architecture and that is fully interoperable with other Semantic Web initiatives”
- “a significant pool of well thought-out metadata terms to re-use”
- Wider uptake of RDA? …
Thank you!

- gordon@gordondunsire.com