

24 October 2011

To: Joint Steering Committee for Development of RDA

From: Alan Danskin, Chair, JSC

Subject: Mapping ISBD Area 0 vocabularies to RDA carrier and content  
vocabularies via the RDA/ONIX Framework for resource categorization (ROF):  
briefing/discussion paper

The following paper has been received from Gordon Dunsire.

# Mapping ISBD Area 0 vocabularies to RDA carrier and content vocabularies via the RDA/ONIX Framework for resource categorization (ROF): briefing/discussion paper

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*Gordon Dunsire, Oct 2011*

## **Background**

In June/July 2010 the JSC and ISBD/XML Study Group independently published discussion documents on the use of the RDA/ONIX Framework for resource categorization (ROF).

JSC: Revision to: Categorization of content and carrier (6JSC/ALA Rep/1):

<http://www.rda-jsc.org/working2.html#ala-6>

ISBD/XML: Analysis of content and carrier designators in the ISBD consolidated edition with respect to the RDA/ONIX Framework:

<http://www.ifla.org/files/cataloguing/isbdrg/area-0-analysis.pdf>

ISBD: Mapping of RDA content types to ISBD content forms and media types

<http://www.ifla.org/node/5618>

ISBD Review Group has a draft *Mapping from ISBD Area 0 to RDA/ONIX Framework for Resource Categorization* prepared by John Hostage, 27 Oct 2010.

Gordon Dunsire has developed an MS Access database of the ROF, with the RDA and ISBD vocabularies and mappings between them.

JSC and ISBD RG have a mutual interest in:

- Mapping RDA carrier and content vocabularies to ISBD Area 0 vocabularies.
- Using the ROF as a hub for separate RDA and ISBD spoke mappings, to accommodate future mappings from either RDA or ISBD to other carrier and content vocabularies.
- Developing mappings in RDF to improve interoperability of linked data in the Semantic Web.

- Using the Open Metadata Registry (OMR) as a vocabulary management tool.

## Vocabulary Mapping Framework

The Vocabulary Mapping Framework (VMF) includes the ROF vocabularies:

<http://www.doi.org/VMF/documents.html>

Vocabulary concepts are registered as RDF classes; e.g. vmf:Character\_language.

The VMF does not include the ROF properties.

The intended use of the VMF is to link the URI of a concept from an external vocabulary, say rofCharacter:T1001, to the URI of the corresponding class in the VMF, vmf:Character\_language. This implies that the ROF vocabularies should be registered in their own namespaces, as external vocabularies, and then subsequently linked to the VMF.

## OMR vocabularies

The relevant vocabularies maintained in the OMR are:

ISBD Content Form

<http://metadataregistry.org/vocabulary/show/id/113.html>

ISBD Content Qualification of Dimensionality

<http://metadataregistry.org/vocabulary/show/id/117.html>

ISBD Content Qualification of Motion

<http://metadataregistry.org/vocabulary/show/id/116.html>

ISBD Content Qualification of Sensory Specification

<http://metadataregistry.org/vocabulary/show/id/118.html>

ISBD Content Qualification of Type

<http://metadataregistry.org/vocabulary/show/id/115.html>

ISBD Media Type

<http://metadataregistry.org/vocabulary/show/id/114.html>

RDA Carrier Type

<http://metadataregistry.org/vocabulary/show/id/46.html>

RDA Content Type

<http://metadataregistry.org/vocabulary/show/id/45.html>

RDA Media Type

<http://metadataregistry.org/vocabulary/show/id/37.html>

ISBD terms are in Croatian, English, and Spanish. ISBD vocabularies are in Published status.

RDA terms are in English, and German. RDA vocabularies are in New-Proposed status.

## Representing the ROF in RDF

A base domain for the ROF element sets and vocabularies is required.

## Opaque URIs

ISBD, and IFLA standards in general, prefer the use of opaque URIs in element sets and value vocabularies, to reflect the multi-lingual environment, encourage the development of translations, and improve use.

RDA uses opaque URIs for value vocabularies, but URIs based on English labels for element sets. There is now an opinion that the element set URIs should also be opaque:

<http://metadataregistry.org/blog/2010/04/08/readable-uris/>

## Element sets

ROF has two distinct element sets, for resource carriers and resource content.

A third element set for general classes is required.

## Reciprocal properties

Reciprocal properties should be created for all base properties, with appropriate range.

e.g. isHousingFormatOf, with range CarrierCategory.

These reciprocal properties will provide interoperability between the hub ROF and mapped vocabularies.

e.g. find carrier categories where isHousingFormatOf a specified format.

## General element set

### Classes

- BaseCategory (subClassOf Category)
- Category
- QualifiedCategory (subClassOf Category)

## Carrier element set

### Classes

- BaseCarrierCategory (subClassOf CarrierCategory; subClassOf BaseCategory)
- CarrierCategory (subClassOf Category)
- QualifiedCarrierCategory (subClassOf CarrierCategory; subClassOf QualifiedCategory)

## Properties

All properties have domain CarrierCategory.

### Base properties

- hasHousingFormat
- hasIntermediationTool
- hasStorageMediumFormat

### Other properties

- hasAppliedMaterial
- hasBaseMaterial
- hasEncodingFormat
- hasFixationMethod
- hasFixationTool
- hasIntermediationMethod

### Content element set

#### *Classes*

- BaseContentCategory (subClassOf ContentCategory; subClassOf BaseCategory)
- ContentCategory (subClassOf Category)
- QualifiedContentCategory (subClassOf ContentCategory; subClassOf QualifiedCategory)

#### *Properties*

All properties have domain ContentCategory.

#### Base properties

- hasCharacter
- hasImageDimensionality
- hasImageMovement
- hasSensoryMode

#### Other properties

- hasCaptureMethod
- hasExtensionMode
- hasExtensionRequirement
- hasExtensionTermination
- hasFormOrGenre
- hasInteraction
- hasPurpose
- hasRevisionMode
- hasRevisionTermination
- hasRevisionRequirement
- hasSubject

### Vocabularies

ROF specifies "primary" values for several carrier and content attributes, as sets of controlled terms with definitions.

Each set of values requires its own RDF/SKOS vocabulary.

The number of values in each set is given in brackets.

## Carrier vocabularies

### Base

- HousingFormat (6)
- IntermediationTool (8)
- StorageMediumFormat (8)

## Content vocabularies

### Base

- Character (4)
- ImageDimensionality (3)
- ImageMovement (3)
- SensoryMode (6)

### Other

- ExtensionMode (3)
- ExtensionRequirement (3)
- ExtensionTermination (3)
- Interaction (2)
- RevisionMode (4)
- RevisionRequirement (3)
- RevisionTermination (3)

## Mapping using the ROF

Mapping is achieved by using the base carrier or content properties, as **outlined** below.

A spoke-spoke mapping between an ISBD and RDA category is only equivalent, in the ROF, if all base carrier or content properties have the same values, as term URIs from the prescribed vocabularies

All RDA categories have all base properties specified.

Only some ISBD categories can be mapped to all base carrier or content properties; only these can be possibly equivalent to an RDA category. See the *ISBD content form: spoken word* example. All other ISBD categories have incomplete base mappings to the ROF hub.

## Further issues

- Mapping of ROF properties and classes to other namespaces, including RDA and ISBD.
- Use of qualified resource categories.
- Pre- or post-coordinated synthesis of ISBD compounds to match RDA base categories.
- Development of one or more DC Application Profiles or OWL ontologies for the ROF, specifying the base property sets.
- Alignment with development of XKOS (extended SKOS) and other structural namespaces for faceted classification/categorization systems.

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- Creation of a management and development group for the ROF.

## **Appendices**

1. Example mappings.
2. ROF vocabulary terms and definitions.

## Example mappings

The examples contain triples taken from the RDA and ISBD namespaces, giving additional explanatory annotations and samples of multi-lingual annotations.

The URIs from the ROF element set and vocabulary namespaces are made up for these examples. Note that it is recommended that URIs should be opaque; element set examples here use English labels for clarity and convenience.

The examples are in ttl (terse triple language) format: the extended URI is the subject of a set of triples, each separated by a semi-colon, with an indented URI for each predicate followed by the URI of the object, or a literal value. Each set of triples with a common subject is terminated by a full-stop.

## From RDA

### Content type: spoken word

```

RDAContentType:1013
  a skos:Concept;
  skos:prefLabel "spoken word"@en;
  skos:prefLabel "gesprochenes Wort"@de;
  skos:definition "Content expressed through language in an audible form."@en;
  skos:scopeNote "Includes recorded readings, recitations, speeches, interviews, oral histories,
etc., computer-generated speech, etc."@en;
  a rofContent:BaseContentCategory;
  rofContent:hasCharacter rofCharacter:T1001;
  rofContent:hasImageDimensionality rofImageDimensionality:T1003;
  rofContent:hasImageMovement rofImageMovement:T1003;
  rofContent:hasSensoryMode rofSensoryMode:T1002.
rofCharacter:T1001
  a skos:Concept;
  skos:prefLabel "language"@en;
  skos:definition "Content expressed in human or machine-readable language."@en.
rofImageDimensionality:T1003
  a skos:Concept;
  skos:prefLabel "not applicable"@en;
  skos:definition "Content that is not of Character image."@en.
rofImageMovement:T1003
  a skos:Concept;
  skos:prefLabel "not applicable"@en;
  skos:definition "Content that is not of Character image."@en.
rofSensoryMode:T1002
  a skos:Concept;
  skos:prefLabel "hearing"@en;
  skos:definition "Content that is intended to be perceived through hearing."@en.

```

**Carrier type: audiocassette**

RDACarrierType:1007

a skos:Concept;  
 skos:prefLabel "audiocassette"@en;  
 skos:prefLabel "Audiokassette"@de;  
 skos:definition "A cassette containing an audio tape."@en;  
 a rofCarrier:BaseCarrierCategory;  
 rofCarrier:hasHousingFormat rofHousingFormat:T1005;  
 rofCarrier:hasIntermediationTool rofIntermediationTool:T1005;  
 rofCarrier:hasStorageMediumFormat rofStorageMediumFormat:T1003.

rofHousingFormat:T1005

a skos:Concept;  
 skos:prefLabel "cassette"@en;  
 skos:definition "A rectangular casing fitted with two reels holding a roll."@en.

rofIntermediationTool:T1005

a skos:Concept;  
 skos:prefLabel "audio player"@en;  
 skos:definition "A device designed to play audio recordings."@en.

rofStorageMediumFormat:T1003

a skos:Concept;  
 skos:prefLabel "roll"@en;  
 skos:definition "A wound length of material (paper, film, tape, etc.)."@en.

**Example mappings from ISBD****Content form: spoken word**

ISBDContentForm:T1008

a skos:Concept;  
 skos:prefLabel "spoken word"@en;  
 skos:prefLabel "palabra hablada"@sp;  
 skos:prefLabel "izgovorena riječ"@hr;  
 skos:definition "Content expressed through the sound of the human voice talking."@en;  
 skos:scopeNote "Examples include talking books, radio broadcasts, oral history recordings, and audio recordings of plays, whether recorded in analogue or digital format."@en;  
 a rofContent:BaseContentCategory;  
 rofContent:hasCharacter rofCharacter:T1001;  
 rofContent:hasImageDimensionality rofImageDimensionality:T1003;  
 rofContent:hasImageMovement rofImageMovement:T1003;  
 rofContent:hasSensoryMode rofSensoryMode:T1002.

rofCharacter:T1001

a skos:Concept;  
 skos:prefLabel "language"@en;  
 skos:definition "Content expressed in human or machine-readable language."@en.

rofImageDimensionality:T1003

a skos:Concept;  
 skos:prefLabel "not applicable"@en;  
 skos:definition "Content that is not of Character image."@en.

rofImageMovement:T1003

a skos:Concept;  
 skos:prefLabel "not applicable"@en;

skos:definition "Content that is not of Character image."@en.  
 rofSensoryMode:T1002  
 a skos:Concept;  
 skos:prefLabel "hearing"@en;  
 skos:definition "Content that is intended to be perceived through hearing."@en.

### Content form: image

ISBDContentForm:T1002  
 a skos:Concept;  
 skos:prefLabel "image"@en;  
 skos:prefLabel "imagen"@sp;  
 skos:prefLabel "slika"@hr;  
 skos:definition "Content expressed through line, shape, shading, etc. An image can be still or moving, in two or three dimensions."@en;  
 skos:scopeNote "Examples include art reproductions, maps, raised relief maps, photographs, remote-sensing images, stereographs, motion pictures, and lithographs."@en;  
 a rofContent:ContentCategory;  
 rofContent:hasCharacter rofCharacter:T1003;  
 rofCharacter:T1003  
 a skos:Concept;  
 skos:prefLabel "image"@en;  
 skos:definition "Content expressed in line, shape, mass and/or other visually-realized forms."@en.

### Content form: text

ISBDContentForm:T1009  
 a skos:Concept;  
 skos:prefLabel "text"@en;  
 skos:prefLabel "texto"@sp;  
 skos:prefLabel "tekst"@hr;  
 skos:definition "Content expressed through written words, symbols and numbers."@en;  
 skos:scopeNote "Examples include books (printed or electronic), correspondence, databases of journals, and microfilmed newspapers."@en;  
 a rofContent:ContentCategory;  
 rofContent:hasCharacter rofCharacter:T1001;  
 rofContent:hasImageDimensionality rofImageDimensionality:T1003;  
 rofContent:hasImageMovement rofImageMovement:T1003;  
 rofCharacter:T1001  
 a skos:Concept;  
 skos:prefLabel "language"@en;  
 skos:definition "Content expressed in human or machine-readable language."@en.  
 rofImageDimensionality:T1003  
 a skos:Concept;  
 skos:prefLabel "not applicable"@en;  
 skos:definition "Content that is not of Character image."@en.  
 rofImageMovement:T1003  
 a skos:Concept;  
 skos:prefLabel "not applicable"@en;  
 skos:definition "Content that is not of Character image."@en.

### Content qualification of sensory specification: tactile

ISBDCQSensorySpecification:T1004

a skos:Concept;  
skos:prefLabel "tactile"@en;  
skos:prefLabel "táctil"@sp;  
skos:altLabel "taktilni"@hr;  
skos:altLabel "taktilna"@hr;  
skos:definition "Content that is intended to be perceived through touch."@en;  
a rofContent:ContentCategory;  
**rofContent:hasSensoryMode rofSensoryMode:T1003.**

rofCharacter:T1003

a skos:Concept;  
skos:prefLabel "touch"@en;  
skos:definition "Content that is intended to be perceived through touch."@en.

### Media type: Video

ISBDMediaType:T1007

a skos:Concept;  
skos:prefLabel "video"@en;  
skos:prefLabel "vídeo"@sp;  
skos:prefLabel "video"@hr;  
skos:definition "Media used to store moving or still images, designed for use with a playback device such as a videocassette player or DVD player."@en;  
skos:scopeNote "Includes media used to store digitally encoded as well as analogue images."@en;  
a rofCarrier:CarrierCategory;  
**rofCarrier:hasIntermediationTool rofIntermediationTool:T1006.**

rofIntermediationTool:T1006

a skos:Concept;  
skos:prefLabel "audiovisual player"@en;  
skos:definition "A device designed to play audiovisual recordings."@en.

## RDA/ONIX Framework vocabulary terms and definitions

\* indicates a term from a base category vocabulary.

Label	Definition	Note	Vocabulary	Type	
image	Content expressed in line, shape, mass and/or other visually-realized forms.		Character	Content	*
language	Content expressed in human or machine-readable language.		Character	Content	*
music	Content expressed in musical form.		Character	Content	*
other	Content expressed in a form other than language, music, or image.	Includes other forms of communicating phenomena, qualities, etc., perceived directly through the human senses—e.g., natural or machine-generated sounds, aromas, textures, etc.—as well as those that cannot be perceived directly through the human senses—e.g., electromagnetic waves.	Character	Content	*
integration	Extension through the integration of added content.		ExtensionMode	Content	
not applicable	The content is not expected to be extended after initial release.		ExtensionMode	Content	
succession	Extension through the successive release of discrete segments, parts, issues, volumes, supplements, etc.		ExtensionMode	Content	
essential	Extension of the content after initial release is essential for its integrity.		ExtensionRequirement	Content	
inessential	Extension of the content after initial release is not essential for its integrity.		ExtensionRequirement	Content	
not applicable	The content is not expected to be extended.		ExtensionRequirement	Content	
determinate	The period of extension of the content has a predetermined end.		ExtensionTermination	Content	
indeterminate	The period of extension of the		ExtensionTermination	Content	

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	content has no predetermined end.		nation		
not applicable	The content is not expected to be extended.		ExtensionTermination	Content	
binding	An outer cover affixed to a gathering of one or more sheets.		HousingFormat	Carrier	*
cartridge	A rectangular casing fitted with a single reel holding a roll.		HousingFormat	Carrier	*
cassette	A rectangular casing fitted with two reels holding a roll.		HousingFormat	Carrier	*
flipchart	A hinging device holding two or more sheets designed for use on an easel.		HousingFormat	Carrier	*
not applicable	The storage medium is not encased in a housing.		HousingFormat	Carrier	*
reel	A flanged spool for holding a roll.		HousingFormat	Carrier	*
not applicable	Content that is not of Character image.		ImageDimensionality	Content	*
three-dimensional	Image content that is intended to be perceived in three-dimensions.		ImageDimensionality	Content	*
two-dimensional	Image content that is intended to be perceived in two-dimensions.		ImageDimensionality	Content	*
moving	Image content that is perceived to be moving.		ImageMovement	Content	*
not applicable	Content that is not of Character image.		ImageMovement	Content	*
still	Image content that is perceived to be static.		ImageMovement	Content	*
interactive	The content responds to actions performed by the user (e.g., searches, commands, selections).		Interaction	Content	
non-interactive	The content does not respond to actions performed by the user.		Interaction	Content	
audio player	A device designed to play audio recordings.		Intermediation Tool	Carrier	*
audiovisual player	A device designed to play audiovisual recordings.		Intermediation Tool	Carrier	*
computer	A device designed to perform prescribed sequences of operations on electronic data.		Intermediation Tool	Carrier	*
microform reader	A device that magnifies microforms for reading with the unaided eye.		Intermediation Tool	Carrier	*
microscope	An instrument that magnifies objects by means of a lens or lenses so as to reveal details invisible to the naked eye.		Intermediation Tool	Carrier	*
not required	No intermediation tool is required (i.e., the content of the resource is directly and adequately perceivable through one or more of the human		Intermediation Tool	Carrier	*

	senses).				
projector	An optical device consisting of a light source, lens system, and image holder for projecting an image on a screen or other surface.		Intermediation Tool	Carrier	*
stereoscope	An optical device with two lenses enabling each eye to see a separate image of essentially the same content to give the effect of three-dimensions.		Intermediation Tool	Carrier	*
correction	Revision through the release of notices of errors, corrections, addenda, etc.		RevisionMode	Content	
not applicable	The content is not expected to be revised after initial release.		RevisionMode	Content	
substitution	Revision through the release of pages, chapters, parts, volumes, etc., directly to replace previously released counterparts, including the replacement of the entire resource with a new version.		RevisionMode	Content	
transformation	Revision through the incorporation of changes (including deletions) directly into the previously released content.		RevisionMode	Content	
essential	Revision of the content after initial release is essential for its integrity.		RevisionRequirement	Content	
inessential	Revision of the content after initial release is not essential for its integrity.		RevisionRequirement	Content	
not applicable	The content is not expected to be revised.		RevisionRequirement	Content	
determinate	The period of revision of the content has a predetermined end.		RevisionTermination	Content	
indeterminate	The period of revision of the content has no predetermined end.		RevisionTermination	Content	
not applicable	The content is not expected to be revised.		RevisionTermination	Content	
hearing	Content that is intended to be perceived through hearing.		SensoryMode	Content	*
none	Content that is not intended to be perceived through the human senses.		SensoryMode	Content	*
sight	Content that is intended to be perceived through sight.		SensoryMode	Content	*
smell	Content that is intended to be perceived through smell.		SensoryMode	Content	*
taste	Content that is intended to be perceived through taste.		SensoryMode	Content	*

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touch	Content that is intended to be perceived through touch.		SensoryMode	Content	*
chip	A small wafer of semiconductor silicon.		StorageMedium Format	Carrier	*
cylinder	A roller-shaped form.		StorageMedium Format	Carrier	*
disc	A flat, circular piece of material (plastic, metal, etc.).		StorageMedium Format	Carrier	*
file server	A computer storage device with hardware and software connections to a communications network.		StorageMedium Format	Carrier	*
roll	A wound length of material (paper, film, tape, etc.).		StorageMedium Format	Carrier	*
sheet	A flat piece of thin material (paper, plastic, etc.), usually rectangular in shape.		StorageMedium Format	Carrier	*
sphere	A round, ball-shaped form.		StorageMedium Format	Carrier	*
strip	A short length of material (paper, film, tape, etc.).		StorageMedium Format	Carrier	*