

RDA conformance

Discussion paper for RSC

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Abstract

This paper discusses aspects of the conformance of metadata to RDA. The paper poses several questions for discussing RSC strategy for assessing and assigning conformance to metadata, and presents a draft expansion of RDA Toolkit guidance to accommodate the topic.

Background

An RDA metadata statement describes an instance of an RDA entity.

All metadata statements can be formatted with a subject-predicate-object (linked data triple) structure, which is the equivalent of an RDA entity-element-value structure.

RDA instructions cover a full range of data capture and recording methods.

RDA has the flexibility to cover a wide range of metadata applications at an assured level of interoperability. It does this by providing choices for:

- entity granularity (the RDA Entity and Agent hierarchies)
- element granularity (the element hierarchies)
- recording method
- source or construction of values (through recording sources, vocabulary encoding schemes, and string encoding schemes)

Assured interoperability is provided by the semantic coherency of the RDA entities and element sets.

The coherency and integrity of RDA metadata statements requires the use of RDA elements.

The value of an RDA metadata statement is determined by the application of RDA instructions and guidance.

A value of an RDA metadata statement that uses a relationship element is part of the description of the entity in focus, not the related entity. For example, “This manifestation has related agent of manifestation ‘that agent’” is a metadata statement about ‘this manifestation’, and does not describe ‘that agent’. Conversely, the inverse statement “That agent has related manifestation of agent ‘this manifestation’” is about ‘that agent’.

The ‘related entity of [RDA Entity]’ elements are defined as **attribute elements** in RDA, not relationship elements, because the expected value is not an RDA entity.

Unconstrained element set

The RDA Registry provides an ‘unconstrained’ set of elements. An unconstrained element has a broader meaning than the associated RDA Toolkit element set. The unconstrained elements do not make a distinction between the resource entities *Work*, *Expression*, *Manifestation*, and *Item*, or between the agent entities *Agent*, *Collective Agent*, *Person*, *Corporate Body*, and *Family*.

The unconstrained elements are intended as a tool to interoperate well-formed RDA metadata description sets with metadata from implementations of data models that differ from the IFLA

Library Reference Model. This involves transforming data that is conformant with RDA into data that is not conformant with RDA. The RDA Registry provides a set of machine-actionable mappings to support such transformation. The mappings are one-way, from RDA to non-RDA, and they cannot be used to transform non-RDA metadata statements into RDA. They are intended for developing a facility to export RDA metadata for re-use in a non-RDA application.

The unconstrained element set is not an integral part of RDA, and its use in metadata statements is not conformant with RDA.

Minimum description

RDA provides instructions on the requirements for a minimum description of each RDA entity in the context of the entity.

RDA requires that a description of an entity includes an appellation in the form of a name or title, an access point, or a local identifier.

For a nomen, RDA also requires a metadata statement recording the value of its nomen string.

RDA provides specific guidance on the requirements for a minimum description of an RDA resource entity (*Work, Expression, Manifestation, and Item*).

RDA requires that a description of a resource entity also includes the appropriate so-called ‘primary’ relationship elements that associate the entity with the other entities that constitute an information resource. These include the shortcut elements that relate a *Work* to its *Manifestation* and vice-versa.

RDA requires that the use of primary relationship elements in a description of an information resource meets the essential cardinality restrictions of the LRM. RDA provides specifications within the guidance on minimum description.

Conformance

Direct conformance

A metadata statement has direct conformance if all of these conditions are met:

- It describes an (instance of an) RDA entity.
- It uses an RDA element.

A metadata description set has direct conformance if all of these conditions are met:

- All of its metadata statements have direct conformance.
- It includes metadata statements for a minimum description of the entities being described.

Indirect conformance

A metadata statement has indirect conformance if all of these conditions are met:

- It describes an (instance of an) entity that has narrower or the same semantics as an RDA entity. The non-RDA entity must be an **entity subtype** or subclass of the corresponding RDA entity. For example, a description of a *Child* or *Adult* entity may be conformant if *Child* or *Adult* are mapped to RDA *Person* as an entity subtype or subclass.
- It uses an element that has narrower or the same semantics as an RDA element. The non-RDA element must be an **element subtype** or subproperty of the corresponding RDA element. For example, a description of a *Person* (or a subtype) that uses an element ‘has

place of education' may be conformant if the element is mapped to RDA Person: related place of person as an element subtype or subproperty.

A metadata description set has indirect conformance if all of these conditions are met:

- All of its metadata statements have indirect conformance.
- It includes metadata statements for a minimum description of the entities being described.

Partial conformance

A metadata statement is either conformant with RDA or it is not; there is no utility in the concept of partial conformance of a statement.

An RDA metadata statement may be included in a metadata description set that includes non-RDA metadata statements.

A metadata description set that describes two or more entities may describe one or more RDA entities and one or more non-RDA entities.

A metadata description set that describes only one entity may use RDA and non-RDA elements associated with the entity.

A metadata description set is partially conformant with RDA if it includes RDA metadata statements that meet the minimum description requirements for one or more entities that are described.

Conformance levels

RDA is intended to produce data that can interoperate with metadata from non-RDA sources.

The level of interoperability is dependent on the semantics of the metadata statements. Sources that are based on the LRM will have a higher degree of interoperability than sources that use an incompatible conceptual model.

RDA metadata statements and description sets are expected to be mixed with metadata that is not partially or fully conformant with RDA for processing and packaging within an application.

Any categorization of a metadata package for its level of RDA conformance should accommodate partial conformance. A minimal categorization is:

1. **Fully conformant:** the package is an RDA metadata description set that meets the specifications for minimum description.
2. **Partially conformant:** the package includes one or more RDA metadata description sets that meet the specifications for minimum description, and it includes at least one description set that is not conformant with RDA.
3. **Not conformant:** the package includes no RDA metadata description sets that meet the specifications for minimum description, although it may include RDA metadata statements.

An RDA conformance level can be assessed by:

- Analysing and parsing metadata into a set of metadata statements in subject-predicate-object syntax.
- Determining the direct or indirect conformance of each metadata statement in the set.
- Determining that the metadata description set contains a subset of metadata statements that meets the minimal description requirements for each of the entities that are described, including cardinality restrictions on the kinds of entities.

Assigning RDA conformance levels

It is not always necessary to make a full assessment of a metadata package or description set in order to assign a simple conformance level.

Metadata that is conformant with the original RDA instructions may not be conformant with the new instructions. The conceptual model has changed, and known gaps in coverage and accommodation have been filled.

A more granular categorization of partial conformance is highly dependent on the application for which metadata packages are processed. This makes it difficult to provide general guidance in RDA, although the Toolkit might accommodate this as “community” content.

Some communities may wish for some form of certification of conformance.

Toolkit guidance

There is no guidance in the new Toolkit about metadata conformance.

There is a guidance chapter on ‘Data elements’ that is part of the ‘Introduction to RDA’ that also includes guidance on ‘Objectives and principles governing RDA’ and ‘Standards related to RDA’.

This paper proposes that guidance on RDA conformance is a natural extension of the outline of RDA data components given in ‘Data elements’, and that the topic fits with the other guidance chapters in the Introduction. The proposal changes the title of the chapter from ‘Data elements’ to ‘Data conformance’.

A clean copy of a draft revision of the Toolkit guidance chapter on ‘Data elements’ that is expanded to cover RDA conformance is appended to this paper.

The revision retains most of the existing content, but rearranges it for clarity and consistency. The revision specifically clarifies that only the unambiguous formal, preferred label, or notation, or IRI of an RDA element is conformant when recording the element as a predicate of an RDA metadata statement.

Questions for discussion

The 3R Project is nearing completion, and the foundations of the guidance and instructions for producing well-formed metadata conforming to the IFLA Library Reference Model are established.

The following questions are posed in this strategic context.

Question 1: Should the RSC offer conformance certification in addition to the passive guidance included in the Toolkit?

Question 2: Should the Toolkit include content for assessing conformance for specific application communities? Content might include examples, alignments and mappings for parsing metadata statements, and decision trees.

Question 3: Should the RSC offer additional technical guidance and support for conformance, interoperability, and mappings between RDA metadata and non-RDA applications?

Data conformance

Conformance of RDA metadata

For general guidance on implementing RDA metadata for an application, see Guidance: [RDA implementation scenarios](#).

Conformance of metadata statements

A *metadata statement* is conformant with RDA if all of the following requirements are met.

- The statement is well-formed
- The statement describes an instance of an RDA entity
- The statement records a value of an RDA element assigned to the entity
- The statement records a value that is compatible with the RDA guidance and instructions

A well-formed RDA metadata statement can be formatted in a basic subject-predicate-object syntax, where the subject is the entity being described, the predicate is the characteristic being recorded, and the object is the recorded value of the characteristic.

This syntax may be implemented in a range of data structures.

A metadata statement that describes an *entity subtype* of an RDA entity has latent conformance because a statement about an entity subtype is also a statement about an *entity supertype*. The entity subtype may not be an RDA entity.

A metadata statement that records a value of an element subtype of an RDA element has latent conformance because a value of an *element subtype* is also a value of an *element supertype*. The element subtype may not be an RDA element.

Conformance of metadata description sets

A *metadata description set* is conformant with RDA if all of the following requirements are met.

- Each *metadata statement* in the set is conformant with RDA
- The metadata description set of each entity that is described includes a subset of statements that meets the specifications for a minimum description of the entity

The specifications for the minimum requirements of a description of an RDA entity are included in the instructions for the entity.

For guidance and specifications for the minimum requirements of a description of a resource entity, see Guidance: [Minimum description of a resource entity](#).

- [RDA entities](#)
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RDA entities

The RDA entities are:

- [RDA Entity](#)
 - [Work](#)
 - [Expression](#)
 - [Manifestation](#)
 - [Item](#)
 - [Agent](#)
 - [Person](#)
 - [Collective Agent](#)
 - [Corporate Body](#)
 - [Family](#)
 - [Nomen](#)
 - [Place](#)
 - [Timespan](#)

These entities generally reflect the entities identified in the [IFLA library reference model \(LRM\)](#), with the following exceptions:

- The top-level entity in LRM (*Res*) is not used in RDA. Instead, *RDA Entity* is an *entity subtype* of *Res* that is limited to the set of entities defined in RDA, rather than all things or entities in the universe of human discourse. *RDA Entity* is an *entity supertype* of all other RDA entities.
- The LRM entity *Collective Agent* has been subdivided into entity subtypes in RDA (*Family* and *Corporate Body*) for the purpose of extending the LRM to provide specific attributes of those types of collective agent, and specific relationships relevant to them

RDA elements

The elements in RDA reflect the attributes and relationships associated with the RDA entities. They often provide a greater level of granularity than the LRM itself.

RDA follows the LRM categorization of elements as attributes and relationships.

- *attribute element*
- *relationship element*

The LRM notes that the distinction is dependent on the implementation of the model for recording an IRI as the value of an element.

An RDA relationship element accommodates the recording of an IRI for an RDA entity.

An RDA attribute element either does not accommodate the recording of an IRI, or does not record an RDA entity.

RDA provides guidelines and instructions for recording the values of these elements, and usually provides more than one recording method.

For general guidance on recording methods, see Guidance: [Recording methods](#).

Choice of elements

Decisions on whether certain elements are core, and the cardinality of recorded elements, may be indicated by an agent who creates the metadata. These decisions may be recorded in [RDA toolkit](#) as policies, as separate documents issued by the agent, or as an *application profile*.

For general guidance on application profiles, see Guidance: [Application profiles](#)

Legacy elements and deprecation

RDA retains legacy elements that were developed before the publication of the LRM if:

- an element is consistent with the LRM and its implementation in RDA
- an element remains useful following the implementation of the LRM

An element that is redundant is replaced by a new or amended element. The label of a redundant element is treated as an alternative label of a replacement element, and appears in the Glossary.

For some elements, RDA offers an option to use another element, and states that the option is preferred.

These elements have a coverage and values that are better accommodated by the preferred element. For example, a broader element may be preferred if there is no longer a requirement to record data with fine granularity.

RSC will review these elements in due course to determine if they should be retained.

Subjects

Coverage of the construction and use of a subject analysis *vocabulary encoding scheme* is out of scope for RDA. Any kind of entity can be a subject of a Work, and there are many ways of modelling the organization and structure of a subject vocabulary.

A work can be related to any RDA entity that is a subject of a work by recording a Work: subject RDA entity or *element subtype*.

This element, and its subtypes, is categorized as a *relationship element*.

A work can be related to any other entity, including a concept or term, that is a subject of a work by recording a Work: subject.

This element is categorized as an *attribute element*.

Unconstrained element set

A metadata statement that uses an element from the unconstrained element set available from the RDA registry is not conformant with RDA.

An unconstrained element is an *element supertype* of an RDA element.

An unconstrained element does not encode the type of entity that is being described.

The unconstrained element set is provided for the transformation of an RDA metadata statement for use in applications that are not conformant with RDA or its implementation of the IFLA library reference model.

RDA relationship data

In the IFLA library reference model, (LRM) relationships are an essential part of the bibliographic universe: they connect instances of entities and provide context for them. The relationships in the LRM are generally presented at a high level; RDA provides many additional refinements to LRM relationships.

An RDA *relationship element* links two RDA entities that may be the same or different types of entity.

The first entity is the entity being described. The second entity is referred to as the *related entity*.

Each relationship element has instructions for applying the RDA recording methods to the value of the related entity.

Relationship hierarchies

The set of relationship elements of an RDA entity has a polyhierarchical semantic structure.

- A relationship element may be broader or narrower in meaning than another relationship element.

- A relationship element of an *entity subtype* of Agent may also be broader or narrower in meaning than an equivalent relationship element of another subtype of Agent, depending on the hierarchy of Agent subtypes.
- The broadest level or granularity of relationship elements for each RDA entity is a set of elements that associates the entity with every other RDA entity and itself.
- Every other relationship element is narrower in meaning and of finer granularity than one of the high-level association elements.

Relationship shortcuts

A *shortcut* is a *relationship element* that directly relates two RDA entities that are indirectly related through one or more intermediary entities.

This allows the two entities to be associated without recording any of the intermediary entities or relationships.

Information about an intermediary entity cannot be inferred from the value of a shortcut element.

For example, Manifestation: work manifested relates a *manifestation* and a *work*. It is a shortcut for:

1. Manifestation: expression manifested
2. Expression: work expressed

There is one intermediary entity, an expression that is embodied by the manifestation and is a realization of the work.

A value of this shortcut contains no information about the intermediary expression.

Relationships with entities that are outside of the scope of RDA

RDA provides a set of relationship elements that associate each RDA entity with an unspecified entity that is outside of the scope of RDA:

- RDA Entity: related entity of RDA entity
 - Work: related entity of work
 - Expression: related entity of expression
 - Manifestation: related entity of manifestation
 - Item: related entity of item
 - Agent: relation entity of agent
 - Person: related entity of person
 - Collective Agent: related entity of collective agent
 - Corporate Body: related entity of corporate body
 - Family: related entity of family
 - Nomen: related entity of nomen
 - Place: related entity of place
 - Timespan: related entity of timespan

RDA makes no assumptions about the nature of the related entity.

Each of these elements is categorized as an attribute element.

Recording relationship elements

A relationship element itself can be recorded in an RDA metadata statement as a *structured description*, an *identifier*, or an *IRI*.

RDA provides a *vocabulary encoding scheme* for each RDA entity that includes the relationship elements for the entity.

A vocabulary encoding scheme is presented as an element set for the entity in the RDA registry.

Each element set provides data for identifying and recording each element associated with the entity:

- A Toolkit label and a Registry label that can be used for a structured description of the element
- A compact version of a Registry IRI for the element that can be used for an identifier for the element
- A Registry IRI that is the IRI for the element