Metadata & Discovery Group

The role of the RDA Registry in RDA implementation

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ABSTRACT

In this article, the Technical Team Liaison Officer provides an overview of the RDA Registry and the ways in which it is useful not only for Linked Open Data developers but for others implementing Official RDA.

KEYWORDS RDA; RDA Registry; RDA Toolkit

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Introduction

RDA is defined as "a package of data elements, guidelines, and instructions for creating library and cultural heritage metadata that is well-formed according to international models" (RDA Steering Committee, 2022). This "package" is provided through several different venues, including the *RDA Registry* and the *RDA Toolkit*. The *RDA Registry* site documents the entities, elements, and value vocabularies that are part of RDA, while the *RDA Toolkit* provides the guidelines, instructions, and policy statements for how to use them. One can think of the *Registry* as describing the pieces of RDA, with the *Toolkit* as an instruction manual on how these pieces can be used.

RDA provides entities and elements for creating a metadata description set. RDA entities are based on the entities described in the *IFLA Library Reference Model* (LRM) (Riva, Le Bœuf and Žumer, 2018). These entities represent the objects that are being described. RDA elements are used to describe the entities by recording their attributes and relationships to one another. The attributes of an entity may be described using one of RDA's controlled vocabularies.

The *Registry* includes representations of these entities, elements, and vocabularies in Resource Description Framework (RDF), a standard which facilitates the use of RDA in metadata applications using linked open data (American Library Association, Canadian Federation of Library Associations and Chartered Institute of Library and Information Professionals, 2024). Additionally, the *RDA Registry* contains maps and alignments from the RDA element set to related standards, such as the LRM, the

International Standard for Bibliographic Description (ISBD), and the MARC 21 standards.

The primary audience for the *RDA Registry* is application developers and the Linked Open Data community. However, the *Registry* is available to all. RDA's element sets and value vocabularies are available in multiple RDF serialisations, including RDF/XML, JSON, and N-triples, as well as in CSV format. Maps and alignments to related standards are available in N-triples and Turtle, as well as CSV, with selected maps and alignments also available in RDF/XML. The availability of the RDA entities, elements, and vocabularies in the *Registry* ensures consistency when these are used in broader applications, as well as maintaining the semantic coherence of RDA (such as the hierarchy of RDA elements). All element sets and vocabularies are browsable and searchable on the *RDA Registry* site. In the interest of promoting RDA as an international standard, the labels and definitions of RDA element sets and vocabularies are available in multiple languages.

The data of the *RDA Registry* is updated at regular intervals in conjunction with the *Toolkit*, to reflect changes in the content of RDA itself as decided by the RDA Steering Committee (RSC). Additional *Registry* updates may happen at other times in order to support new or edited translations of element labels and definitions in various languages.

The structure of the element sets in the Registry

RDA contains thirteen entities:

- RDA Entity,
- Work,
- Expression,
- Manifestation,
- Item,
- Agent,
- Collective Agent,
- Person,
- Family,
- Corporate Body,
- Nomen,
- Place, and
- Timespan.

The entities are defined on the RDA *Registry site* under the RDA Classes element set (American Library Association, Canadian Federation of Library Associations and Chartered Institute of Library and Information Professionals, 2026). These entities make up the backbone of RDA.

The *Registry* site organises the RDA elements into nine element sets, each of which includes the attributes and relationships of one of the classes of RDA entities.[1] The current *Registry* website allows the user to browse or search each of these nine sets of elements, as well as see the hierarchical relationships between elements. Each element contains a label and a definition in at least one language, as well as the status of the element (published or deprecated), and a compact URI (CURIE) with a link to the full URI of the entry. Each element set has its own CURIE prefix; all Work properties, for example, will have CURIE that begins with *rdaw*.

To demonstrate one example, the element with the CURIE *rdaw:P10256* has an English label of "has subject" and an English definition of the element: "Relates a work to a topic that a work is about." The *rdaw:P10256* CURIE can be expanded to the full URI of: https://www.rdaregistry.info/Elements/w/#P10256.

The canonical element set includes a listed domain for each element, which is the entity that is described by that element. There are two further element sets, known as the datatype element sets and the object element sets. These two "child" sets allow for more specific applications of RDA elements in a linked data context. Each element in the datatype and object elements sets is linked to the related element in the canonical element set as a subproperty. The datatype and object element sets have CURIE prefixes that reflect their relationship to the related canonical element set; if the canonical element set of Work properties has a CURIE prefix of *rdaw*, then the Work datatype properties have a prefix of *rdawd*, and the Work object properties have a CURIE prefix of *rdawo*.

Each element in the datatype element set has a range (or accepted value of a relationship or attribute element) that allows for the entry of text strings. Each element in the object element set has a range of another RDA element or, in some special cases, a range that allows the entry of a concept outside the scope of RDA. (For example, the object element *rdawo:P10256* ("has subject") has a domain of Work and a range of *skos: Concept*[2], allowing one to make the statement that a Work has the subject of a concept that is outside the scope of RDA). Each object element also lists the inverse element when appropriate; for example, *rdawo:P10002* ("has identifier of work") has a domain of Work and a range of Nomen; the inverse element, *rdano:P80049* ("is identifier of work for") has a domain of Nomen, and a range of Work.

The *Registry* also includes a set of unconstrained elements. These are elements that have no listed domain or range, and have semantics that are independent of the IFLA LRM. In this set, the LRM-specific entities of Work, Expression, Manifestation, and Item are reduced to "Resource," and the RDA entities of Agent, Collective Agent, Family, Corporate Body, and Person are reduced to a generic "agent." The unconstrained

[1] The number of element sets does not match the number of RDA entity classes. This is because the element set for Agent contains the attributes and relationships for the entity subtypes of Agent, which includes Person, Collective Agent, Family, and Corporate Body.

[2] This is a class in SKOS, an application of RDF that can be used to represent a list of controlled terms. See https://www.w3.org/TR/swbp-skos-core-spec/

element set is suitable for more generic applications of RDA that do not rely on the semantics of LRM. A map from the more specific RDA elements to the more generic unconstrained elements is provided on the *Registry* site. While the unconstrained elements are supertypes of RDA elements, meaning that they are less specific, they are not conformant with RDA itself.

Value vocabularies in the Registry

The *Registry* contains the value vocabularies that are included in RDA as controlled terms that can be used to describe the attributes of entities. These vocabularies are published with labels, definitions, and scope notes in multiple languages, as well as CURIEs and URIs that allow for linked data applications. The vocabularies are represented as SKOS vocabularies, an application of RDF that can be used to represent a list of controlled terms. The *Registry* also contains vocabularies for the RDA/ONIX framework, a specified set of attribute values used to derive RDA's content and carrier specifications.

Maps and alignments in the Registry

The *Registry* contains maps and alignments from RDA elements and vocabularies to other standards. The maps in the *Registry* represent a single relationship between two classes, properties, or concepts, expressed as an RDF triple. The alignments record general relationships between two standards, using less precise semantics, and are published in tables, usually in CSV format. These maps and alignments only function in one direction; the Registry does not include any maps or alignments from other standards to RDA.

External standards to which RDA is mapped or aligned include Dublin Core, the IFLA LRM, ISBD, MARC 21 authority and bibliographic standards, and the RDA/ONIX framework. Some maps are relatively static, while others, such as the maps to MARC 21, are updated on a regular basis by specific task groups in order to keep up with the development of standards.

Use of the Registry in RDA implementation scenarios

RDA lists four implementation scenarios under the Guidance section of the RDA Toolkit (RDA Steering Committee, 2020). The scenarios outline various levels of application for RDA, from Scenario A (linked open data) to Scenario D (a “flat file” of data).

The *Registry* can be used in all four implementation scenarios. In the case of Scenario A, linked open data, the *Registry* can be used to provide IRIs for elements to allow metadata description sets to be expressed as linked open data in RDF. Values taken from RDA's vocabularies can also be expressed using IRIs in the *Registry*. In Scenario B, relational or object-oriented data, identifiers for RDA elements can be taken from the

compacted version of their IRIs for use in structured data tables. In Scenario C, a bibliographic and authority file, labels can be taken from the *Registry* elements to be used as structured descriptions for access points in a bibliographic record. And in Scenario D, a flat file, a string encoding scheme can be used to organise literal text strings that describe the elements and vocabularies in the *RDA Registry*, with values of descriptive elements recorded as unstructured descriptions when structured descriptions from vocabulary encoding schemes are not available.

In each scenario, the RDA Registry can be used for application developers to provide the needed information about the classes, elements, and vocabularies that make up RDA.

Conclusion

While the *RDA Registry*'s intended purpose is for the development of linked open data applications of RDA, it functions as an important resource for all metadata practitioners using RDA. The Registry site allows for quick reference of RDA, providing an easily searchable list of elements and vocabularies, with the ability to quickly switch languages for labels and definitions. The *Registry* also makes explicit the hierarchies of RDA elements. While the *Registry* does not include any of the robust instructions and guidance that comes with the Toolkit, it serves as an essential part of the RDA package, providing the explicit structure of the RDA entity classes, relationship and attribute elements, and value vocabularies that make up an RDA metadata description set.

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