Collaborating communities revisited

Sodelujoče skupnosti: pogled na desetletje 2008–2018

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Abstract

Purpose: This article follows up "Collaborating communities: the RDA experience and its implications for common information environments", published in 2007 in the proceedings of the 11th seminar on Archives, Libraries, Museums held in Poreč, Croatia. That paper was written before the publication of RDA: Resource Description and Access, the successor to the Anglo-American Cataloguing Rules (AACR). The article outlines what has happened since, with a focus on the development of RDA in collaboration with related standards groups.

Methodology/approach: This is a chronological review of the development of documents, which lead to the publication of RDA. Cooperation and harmonization of description of information objects among different concerned communities is also presented.

Research limitations: The thorough review of RDA and related documents covers the period from 2008 to 2018.

Originality/Practical implications: The strategic development of RDA is dependent on continuing collaboration with international communities, cultural heritage communities, and linked data communities. All of these communities have a strong interest in linked open data and the Semantic Web, and RDA has played a significant role in initiating and stimulating collaborative development of library and cultural heritage metadata in RDF format.

Keywords: RDA, development, cataloguing rules 2008–2018

Izvleček

Namen: Leta 2007 smo na 11. seminarju Arhivi, knjižnice, muzeji v Poreču na Hrvaškem predstavili prispevek z naslovom »Collaborating communities: the RDA experience and its implications for common information environments« [Sodelujoče skupnosti: izkušnje RDA in njihov pomen za skupna informacijska okolja]. Takrat RDA: Resource Description and Access, naslednik Anglo-ameriških katalogizacijskih pravil (AACR), še ni bil objavljen. Zdaj prikazujemo dogodke po letu 2007. Osredotočamo pa se na razvoj RDA in sodelovanje s sorodnimi skupinami za standardizacijo.

Metodologija/pristop: To je kronološki pregled razvoja dokumentov, ki so pripeljali k izdaji RDA. Predstavljeno je tudi sodelovanje in postopki usklajevanja opisa informacijskih objektov med različnimi vključenimi skupnostmi.

Omejitve raziskave: Temeljiti pregled razvoja RDA in sorodnih dokumentov in ustanov zajema obdobje od 2008 do 2018.

Izvirnost/uporabnost raziskave: Razvoj RDA je odvisen od sodelovanja mednarodne skupnosti, skupnosti, ki se ukvarjajo s kulturno dediščino in skupnosti, ki se ukvarja s povezanimi podatki (angl. linked data). Vse te skupnosti so zelo zainteresirane za odprte povezane podatke (angl. linked open data) in semantični splet. RDA je odigral pomembno vlogo pri zasnovi in vzpodbujanju skupnega razvoja knjižničnih metapodatkov in metapodatkov za kulturno dediščino v format RDA.

Ključne besede: RDA, razvoj, katalogizacijska pravila 2008–2018

1 Introduction

This article follows up “Collaborating communities: the RDA experience and its implications for common information environments”, published in 2007 in the proceedings of the 11th seminar on Archives, Libraries, Museums held in Poreč, Croatia. That paper was written before the publication of RDA. The article outlines what has happened since, with a focus on the development of RDA in collaboration with related standards groups.

2 RDA

RDA: Resource Description and Access is the successor to the Anglo-American Cataloguing Rules (AACR). RDA was published as RDA Toolkit in 2009 in the form of a “hyperbook” consisting of instructions for determining the content of metadata for the resources found in library collections. The instructions were contained in chapters focused on groups of entities that were identified by the Functional Requirements for Bibliographic Records (FRBR) model developed

by the International Federation of Library Associations and Institutions (IFLA) in 1998 (IFLA Study Group ..., 2009). FRBR acknowledged that it did not cover all aspects of bibliographic metadata, and it was followed by Functional Requirements for Authority Data (FRAD) in 2009 (IFLA Working Group ..., 2013) and Functional Requirements for Subject Authority Data (FRSAD) in 2010 (Zeng, Žumer, & Salaba, 2010). RDA implemented parts of all three models as they became available, but inconsistencies and gaps between the models prevented full adoption. For example, the report of IFLA's Working Group on Aggregates, published in 2011 (Working Group on Aggregates, 2011), recommended that implementation be delayed until the models were consolidated. As a result, RDA retained the AACR approach to aggregate serial resources.

2.1 RDA governance

The development of RDA was carried out by the Joint Steering Committee for Development of RDA (JSC), under the direction of the Committee of Principals for RDA (CoP).

In 2014, the CoP announced an international consultation on the future strategy for the governance and development of RDA (RDA Strategy Consultation 2014, 2014). The outcome was the adoption of a new governance model, to be implemented between 2015 and 2019 (RDA Board, 2018). The first changes to be made were to rename the CoP as the RDA Board, and the JSC as the RDA Steering Committee (RSC). The RDA Board noted that "RDA is a continually evolving standard that aims to reflect the requirements of the description, cataloguing and metadata community. One of its original aims was to be applicable across cultures, sectors and perspectives" (RDA Board, n. d.). The governance model is international, with representation on the RDA Board and the RSC based on the five United Nations regions of Africa, Asia, Europe, Latin America and the Caribbean, North America, and Oceania (Dunsire, 2016).

The RDA Board identified the strategic drivers for the development of RDA as being international communities, cultural heritage communities beyond libraries, and linked data communities.

As well as the "functional requirements" models, other standards that influenced the development of RDA include International Standard Bibliographic Description (ISBD) (ISBD, 2011) and the International Cataloguing Principles (IFLA Cataloguing Section ..., 2017). The RSC has established light-weight communications protocols with relevant standards groups in order to support ongoing collaboration (RDA Steering Committee, 2018b).

The impact of internationalization on the development of RDA was apparent at the 2015 meeting of the RSC in Edinburgh, Scotland (RDA Steering Committee, 2015). The new governance infrastructure was already underway, with the merger of the United Kingdom representation of the British Library and Chartered Institute of Library and Information Professionals as a preparation for absorption into the new Europe region. Over 50 observers from 18 countries attended public sessions of the RSC meeting. The local Cataloguing and Indexing Group in Scotland organized two very successful events: a seminar on Rare materials in RDA, and a "jane-athon" workshop on cataloguing in a pure RDA environment using the works of Robert Louis Stevenson.

Since the 2015 meeting, all of the original community representation on JSC, which was limited to the Anglo-American community, has been replaced by representatives of the European RDA Interest Group (EURIG), the North American RDA Committee (NARDAC), and the Oceania RDA Committee (ORDAC). Infrastructure for the Latin America and the Caribbean region is currently being developed. While the RDA Board has completed its transition to the new governance model, the RSC expects it will take several years before a representation infrastructure for the Africa and Asia regions will be completed.

2.2 RDA Toolkit

In 2016, the Co-Publishers of RDA announced their intention to review the RDA Toolkit in order to "adjust to changes to the online environment" (RDA Toolkit, 2016). The RDA Toolkit Restructure and Redesign (3R) Project is developing the Toolkit to be more responsive to online users' needs, including adaptive technologies, improved navigation, and simpler displays. The project also covers improvements to the flexibility of content management and production processes. The project has successfully implemented the Document Information Typing Architecture (DITA), an open standard XML data model for authoring and publishing. At the same time, RSC anticipated the imminent publication of the long-awaited consolidation of the IFLA Functional Requirements models, and took the decision at its meeting in Frankfurt, Germany in 2016 to implement the consolidated model as part of the 3R Project (RDA Steering Committee, 2016b).

Normal development processes were suspended, and the content of RDA Toolkit was frozen in April 2017 to allow RSC to focus on the project. A beta version of the new Toolkit was released in June 2018, and the final version is now expected at the end of 2019. Mirroring the shift from "records" to "data" during the development of the Functional Requirements models, the new Toolkit addresses issues of data capture and re-use by metadata aggregators and managers, as well as individual

professionals and paraprofessionals working in a traditional library cataloguing infrastructure.

It is the policy of the RDA Board and the RSC to encourage full translations of the Toolkit and partial translations of RDA Reference, comprising the labels and definitions of RDA entities, elements, and controlled terminologies (RDA Steering Committee, 2016a). The complete Toolkit is translated into several languages, including Catalan, Finnish, French, German, and Spanish. The new governance structure includes a standing working group for translators, with a chair who is a member of RSC in the role of RDA Translations Team Liaison Officer.

2.3 RDA/ONIX Framework for Resource Categorization

The RDA/ONIX Framework for Resource Categorization (ROF) (Joint Steering Committee for Revision of AACR, 2006) was used as the basis for the construction of controlled terminologies for RDA carrier types, content types, and media types.

The JSC implemented the RDA/ONIX Framework Working Group in 2014, to continue to develop the use of the Framework in RDA. Following several requests from RDA user communities to accommodate additional categories, the Working Group produced a set of recommendations for extending and revising the Framework in RDA (JSC RDA/ONIX Framework Working Group, 2014). This was followed in 2015 by guidelines on proposing new categories (JSC RDA/ONIX Framework Working Group, 2015a), with a map from the existing RDA categories to the Framework (JSC RDA/ONIX Framework Working Group, 2015b).

The Framework has been used recently in the 3R Project to determine a terminology for extension plans of works that are intended to change content over time, including series and serials. The terms are based on the ROF attributes for "extension mode" and "extension termination". This collaboration between the library and publishing communities remains a significant component of RDA.

3 Linked data communities

The Data Model Meeting held in London, England in 2007 "examined the fit between RDA: Resource Description and Access and models used in other metadata communities" (British Library, 2007). All of the communities involved had an

interest in linked open data for the Semantic Web, using Resource Description Framework (RDF). The meeting agreed that three actions should be undertaken:

1. development of an RDA element vocabulary
2. development of an RDA Dublin Core Application Profile based on FRBR and FRAD
3. disclosure of RDA value vocabularies using RDF.

Action 3 was the first to be undertaken, using the National Science Digital Library (NSDL) metadata registry sandbox. This was developed over the next few years by Metadata Management Associates into the Open Metadata Registry (OMR), in collaboration with the RDA, IFLA, and Dublin Core communities. The first set of value vocabularies for RDA controlled terminologies was published in RDF in 2011 (Joint Steering Committee for Development of RDA, 2011). The final set of the original vocabularies was published in 2016. All new value vocabularies are published directly in RDF.

Action 1 was completed in 2014 when the RDA element sets were published (RDA Steering Committee, 2014).

Action 2 has been superseded. The new 3R RDA Toolkit is designed to be used with multiple application profiles. The project is developing a profile for what are deemed "core" elements in the original Toolkit. This will list the RDA entities and elements considered as a "minimum input standard" for an effective description of a resource for general applications, indicating repeatability for multiple values and the use of controlled terminologies.

The Dublin Core Metadata Initiative (DCMI) organized a regional seminar in 2012 as a follow-up to the Data Models Meeting. The "Five years on" seminar was again held at the British Library, and was preceded by working meetings of DCMI's Bibliographic Metadata Task Group and the DCMI Vocabulary Management Community (Dublin Core Metadata Initiative, 2012).

Linked data communities are supported by the RDA Registry (RDA Registry, 2017). The Registry was implemented in 2014 to improve the distribution of the RDF representations of the RDA element sets and value vocabularies. The element sets contain the label, description, and scope notes for every RDA element, grouped by RDA entity. The value vocabularies contain the label, description, and scope notes for every controlled term used by RDA. Together, these constitute RDA Reference, which has been translated in more than 15 languages.

The RDA Registry uses the GitHub[1] open distribution service: "a code hosting platform for version control and collaboration". RDA Reference and translations, along with additional tools such as machine-readable RDF maps, are published as the RDA Vocabularies project.[2] Updates to the RDA data are published as separate releases, using a common version numbering system. A release can be downloaded as a single file; all previous releases are available if a roll-back is required by an application. The content is published under an open Creative Commons license that only requires attribution (as RDA). The publishers of RDA, with the agreement of the RDA Board and RSC, want to encourage the use of RDA in linked data applications across a wide range of communities, and no permission is required to use the content in commercial products.

The RDA Vocabularies are available in RDF/XML format, so the data can also be used by XML applications. Indeed, the Toolkit production infrastructure developed in the 3R Project allows RDA Reference to be maintained once and re-used many times. For example, the RDA Reference data for an element is displayed in the Toolkit as part of an element reference section and a related elements section for the element, as part of the list of elements associated with an entity, and as a component of a graphic browser for navigating the new structure of the RDA instructions.

The RDA Vocabularies contain an "unconstrained" version of the RDA element sets. These are not assigned to any entities, and are intended for use in linked data applications that do not conform to the IFLA bibliographic models. The unconstrained elements can be used to interoperate RDA metadata with metadata based on different models of entities and relationships from other communities. Data can be transformed via machine-actionable maps from the full RDA elements to elements from another schema, via the RDA unconstrained elements.

The OMR provides vocabulary maintenance facilities for element sets and value vocabularies. The first activity in the development of the OMR for elements involved FRBR rather than RDA. The FRBR Namespace Project submitted its report in 2008, with several recommendations including the use of the NSDL registry (Dunsire, 2008). RDF representations of the FRBR element set and User task value vocabulary were published in the OMR in 2009, followed by element sets and value vocabularies from FRAD, FRSAD, and object-oriented FRBR (FRBRoo).[3] The OMR is also used for elements and vocabularies taken from other IFLA

[1] GitHub. Available at: https://github.com/.
[2] RDARegistry/RDA-Vocabularies. Available at: https://github.com/RDARegistry/RDA-Vocabularies.
[3] IFLA. *The FRBR vocabularies*. Available at: http://iflastandards.info/ns/fr/.

standards, including ISBD,[4] UNIMARC,[5] and the Multilingual Dictionary of Cataloguing (MulDiCat).[6] The IFLA namespaces have been translated into more than 18 languages.

3.1 IFLA LRM

The IFLA Library Reference Model (LRM) was published in 2017 (Riva, Le Bœuf, & Žumer, 2017). The LRM is "a high-level conceptual reference model [that] covers bibliographic data as understood in a broad, general sense". It consolidates FRBR, FRAD, FRSAD, and the report of the Working Group on Aggregates. The RSC was able to monitor the progress and direction of the consolidation as a result of cross-membership of RSC members with the FRBR Review Group, and submitted a formal response to the world-wide review of a draft of the LRM in 2016. This allowed the RSC to take the decision to implement the LRM as part of the 3R Project.

The LRM was influenced by work carried out to develop FRBRoo (Bekiari, Doerr, Le Bœuf, & Riva, 2015). The object-oriented version of FRBR was developed as an extension of the Conceptual Reference Model (CRM) maintained by the International Council for Museum's International Committee for Documentation (CIDOC).[7] This successful collaboration between the library and museum communities is ongoing, and work has commenced on developing LRMoo, an object-oriented version of the LRM, to supersede FRBRoo. Compatibility with museum metadata offers significant support for the development of RDA for application in the wider cultural heritage communities.

As noted above, the RDA treatment of aggregates was not developed until the consolidation of the report of the Working Group on Aggregates in the LRM. RSC set up an Aggregates Working Group to prepare for a significant change in the elements and instructions for aggregate resources in RDA. This group carried out preliminary analyses of the FRBRoo approach to aggregates (JSC Aggregates Working Group, 2015), and the report of the IFLA working group (RSC Aggregates Working Group, 2016).

[4] IFLA. *The ISBD vocabularies*. Available at: http://iflastandards.info/ns/isbd/.
[5] IFLA. *The UNIMARC vocabularies*. Available at: http://iflastandards.info/ns/unimarc/.
[6] Open Metadata Registry. *Multilingual dictionary of cataloguing terms and concepts (MulDiCat)*. Available at: http://metadataregistry.org/vocabulary/show/id/299.html.
[7] *CIDOC CRM*. Available at: http://www.cidoc-crm.org/.

The RSC Aggregates Working Group was then asked to extend its scope to analyse the treatment of serials in the LRM and in PRESSoo, an extension to the CRM for continuing resources developed by IFLA's PRESSoo Review Group (Le Bœuf, 2016). The RSC group has representatives from the ISSN Network and CONSER to assist with this work.

3.2 ISBD

ISBD is a standard for the content of metadata describing a single bibliographic resource. It does not cover access to the resource, or the relationships between different resources. A special session during the 2011 annual meeting of the JSC in Glasgow, Scotland, was devoted to a meeting between the JSC and representatives of the ISBD Review Group and the ISSN Network to discuss harmonization of RDA, ISBD, and the ISSN manual.

Following the meeting, the ISBD Review Group submitted a number of proposals for developing tools for functional interoperability between RDA and ISBD (RDA Steering Committee, n. d. a). As a result, the Review Group and the RSC developed and maintained an alignment of ISBD elements with RDA elements (Dunsire & IFLA Cataloguing Section's ISBD Review Group, 2015). The alignment is the basis of a set of machine-actionable RDF maps between the RDA and ISBD element sets (RDA Alignments, 2017). The maps allow metadata created using RDA Toolkit and the ISBD stipulations to interoperate at an "unconstrained" level which removes the differences between RDA and LRM's Work, Expression, Manifestation, and Item entities and ISBD's Resource entity. The ISBD Review Group also developed a comparison of mandatory ISBD elements with "core" RDA elements to serve as a tool for constructing interoperable records in ISBD and RDA (Gentili-Tedeschi, Leresche, McGarry, & Rodríguez, 2013).

The ISBD/RDA alignment was also the basis of an alignment between REICAT, the Italian cataloguing rules, and ISBD and RDA (Forassiepi, 2013). The Review Group and RSC also developed a set of alignments (RDA Alignments, 2017) and maps (RDA Maps, 2017) between the ISBD value vocabularies for content forms and media types and ROF.

An overview of actual and potential alignments from ISBD elements and value vocabularies to relevant IFLA and other standards was produced in 2013 (ISBD/XML Study Group, 2013). ISBD is now undergoing a major review to bring it into line with the LRM (ISBD Editorial Group, 2018).

3.3 ISSN

The ISSN Network is coordinated by the ISSN International Centre and maintains and assigns International Standard Serial Numbers. An ISSN is an 8-digit code used to identify journals and other periodical resources that are issued over time.

Following the 2011 RSC meeting, the ISSN International Centre submitted proposals on developing the treatment of serials in RDA (RDA Steering Committee, n. d. b).

A meeting was organized on the "Impact of the IFLA Library Reference Model on ISBD, RDA and Other Bibliographic Standards" in 2017 at Wrocław University Library, Poland, following IFLA's World Library and Information Congress. The meeting was attended by members of the Bibliographic Conceptual Models Review Group (successor to the FRBR Review Group), the ISBD Review Group, the ISSN International Centre, the RSC, and the Permanent UNIMARC Committee. One outcome of the meeting was a joint discussion paper from the ISSN International Centre and the RSC on developing the treatment of serials and other resources that have content that changes through time (known as diachronic works in RDA) (RDA Steering Committee, 2018a). A paper describing the background to the meeting and the issues to be resolved in continuing collaboration was presented to the World Library and Information Congress in 2018 in Kuala Lumpur, Malaysia (Dunsire et al., 2018).

3.4 RIMMF and jane-athons

A rare example of collaboration between applications developers and RDA is the development of RDA in Many Metadata Formats (RIMMF). RIMMF is "a visualization tool for catalogers ... a cataloging training tool ... a prototype (and a sandbox) for what a cataloging interface might look like in a system designed purely for RDA".[8] The freely available software package was developed by The MARC of Quality, a small company that provides training, software, and database services, in consultation with the RDA Development Team responsible for the technical development of RDA.

RIMMF has many features that demonstrate RDA as an implementation of the IFLA bibliographic models, including separation of the metadata for different

[8] RIMMF3 home. Available at: http://www.marcofquality.com/wiki/rimmf3/doku.php.

entities and the use of relationship elements to link the data into a complete description of a resource. RIMMF re-uses the RDA Vocabularies from GitHub, including the translations of RDA Reference which are the bases of multilingual displays of RDA metadata (Dunsire, Fritz, & Fritz, 2016).

The RSC has used RIMMF as the basis of a series of "jane-athons". These are workshops for exploring the application of RDA beyond the constraints of the MARC 21 encoding format. Each workshop focuses on a topic of local interest. They have been held across the world, involving the practical collaboration of many cataloguers from many countries. The metadata created has been published in RIMMF format and RDF linked data format for the Semantic Web.[9]

3.5 MARC 21 and BIBFRAME

The Bibliographic Framework Initiative (BIBFRAME) was started in 2012 by the Library of Congress. "A major focus of the initiative is to determine a transition path for the MARC 21 formats while preserving a robust data exchange that has supported resource sharing and cataloging cost savings in recent decades."[10] BIBFRAME also uses linked data technologies, and states that "RDA is an important source of elements in the vocabulary for BIBFRAME".[11] However, there has been no formal collaboration with the RSC, and the BIBFRAME data model is not based on the FRBR or LRM bibliographic resource entities Work, Expression, Manifestation, and Item. Instead, BIBFRAME uses the three entities Work, Instance, and Item. The BIBFRAME Work is roughly equivalent to a combination of LRM Work and Expression, while BIBFRAME Instance is equivalent to LRM Manifestation. The entity Item is the same in both models. Taniguchi (2017) concludes that conversion from the RDA to BIBFRAME models will be lossy.

RDA Toolkit instructions are not dependent on any specific data encoding format, but an alignment with MARC 21 tags, indicators, and subfields has been included in the Toolkit since it was first published. The RSC is developing mappings from RDA elements to MARC 21 in collaboration with members of the MARC Advisory Committee. Members of the RSC participated in a seminar on the impact of RDA and the LRM on MARC 21 during the American Library Association annual meeting in 2018 (Dunsire, Hennelly, & Young, 2018).

[9] *R-balls*. Available at: http://rballs.info/.
[10] *Bibliographic Framework Initiative*. Available at: https://www.loc.gov/bibframe/.
[11] *BIBFRAME frequently asked questions*. Available at: https://www.loc.gov/bibframe/faqs/.

4 Conclusion

The RSC and JSC have been collaborating with a wide range of bodies that maintain related standards since before the publication of RDA. The consolidation of the LRM is stimulating the development of ISBD, ISSN, and RDA, and provides a common focus for continuing collaboration on harmonization.

The strategic development of RDA is dependent on continuing collaboration with international communities, cultural heritage communities, and linked data communities. All of these communities have a strong interest in linked open data and the Semantic Web, and RDA has played a significant role in initiating and stimulating collaborative development of library and cultural heritage metadata in RDF format (Dunsire, 2014).

Many challenges to the widespread application of linked open data remain. These include the need for identity management of the components of metadata "triples", and the lack of software that can use namespaces and maps to interoperate data at global level (Dunsire & Willer, 2014). While collaboration between standards bodies is active, and increasing, the interaction between international bibliographic standards and major application developers remains poor, despite the open availability of RDF representations of many of the standards.

The needs of common information environments require collaboration, not competition. RDF provides an "atomic" data format that is amenable to a global metadata infrastructure, but most community-based linked data models provide mechanisms for extension to other communities or mappings between community schemas. Universal bibliographic control remains a practical goal, but will not be achieved by imposing a particular view of the bibliographic universe on local communities. The collaborative effort that was applied in the past to agreeing on a single set of standards for bibliographic description and access authority control is now better focused on interoperability of data from a rich and diverse information ecosystem.

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