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## Implementation of Resource Description and Access (RDA): relevant aspects for library management

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### ABSTRACT

**Introduction:** Resource Description and Access (RDA) are guidelines that guide the creation of metadata for information resources available in libraries' online catalogs. It is understood that developing strategies to manage the implementation of the RDA facilitates the process and motivates the library community to adopt the new standard. **Objectives:** present the relevant aspects that can contribute to the management of RDA implementation in libraries. **Methodolog:** Bibliographic research with a qualitative approach, using the Portal Capes databases, Scopus Elsevier, Brapci, BDTD, OasisBr and used content analysis as a technique Bardin (2011). **Result:** presentation of aspects considered relevant in categories: (1) Human and financial resources; (2) RDA Toolkit; (3) RDA training; (4) Cataloging procedures: decisions, policies and documentation; (5) Preparation of library management system; (6) Technological supports and tools. **Conclusion:** The implementation of RDA in libraries involves innovations, opportunities and challenges. The library innovates by aligning itself with the contemporary practices of other libraries, facilitating data exchange during cataloging, preparing it for a future with linked data. It is considered an opportunity to train professionals in cataloging, improve services, such as updating documentation and strengthening authority control. Challenges include implementation costs, the need to translate the RDA Toolkit, the effective development of staff training and cataloging policies; and the preparation of the library management system. Overcoming these challenges will require coordinated efforts and solid strategies to ensure a smooth and successful transition to the RDA.

### KEYWORDS

Resource Description and Access. RDA. Library management.

## Implementação da Resource Description e Access (RDA): aspectos relevantes para a gestão de bibliotecas

### RESUMO

**Introdução:** Resource Description and Access (RDA) são diretrizes que orientam a criação de metadados dos recursos informacionais disponibilizados nos catálogos online das bibliotecas. Compreende-se que elaborar estratégias para administrar a implementação da RDA facilita o processo e motiva a comunidade bibliotecária a adotar a nova norma. **Objetivo:** Apresentar os aspectos relevantes que possam contribuir para o gerenciamento da implementação da RDA nas bibliotecas. **Metodologia:** Pesquisa bibliográfica com abordagem qualitativa, por meio das bases Portal Capes, Scopus Elsevier, Brapci, BDTD, OasisBr, com uso da técnica

de análise de conteúdo Bardin (2011). **Resultados:** Apresentação dos aspectos considerados relevantes em categorias: (1) Recursos humanos e financeiros; (2) RDA Toolkit (3); Treinamento em RDA; (4) Procedimentos de catalogação: decisões, políticas e documentações; (5) Preparação do sistema de gestão de bibliotecas; (6) Suportes e ferramentas tecnológicas.

**Conclusão:** A implementação da RDA nas bibliotecas envolve inovações, oportunidades e desafios. A biblioteca inova ao alinhar-se às práticas contemporâneas das demais bibliotecas, facilitando a troca de dados durante a catalogação, preparando-a para um futuro com dados vinculados. Considera-se como oportunidade a capacitação dos profissionais em catalogação, a melhoria dos serviços, como a atualização das documentações e o fortalecimento do controle de autoridades. Os desafios incluem os custos de implementação, a necessidade de tradução da ferramenta RDA Toolkit, a elaboração eficaz do treinamento para a equipe e das políticas de catalogação; e a preparação do sistema de gestão de bibliotecas. Superar esses desafios exigirá esforços coordenados e estratégias sólidas para garantir uma transição suave e bem-sucedida para a RDA.

## PALAVRAS-CHAVE

Resource Description and Access. RDA. Gestão de bibliotecas

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**JITA:** IA. Cataloging, bibliographic control

**ODS:** g. Industry, Innovation and Infrastructure



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## 1 INTRODUCTION

Resource Description and Access (RDA) was launched in 2010 as a metadata standard. According to the RDA Steering Committee (RSC) (2023), its development began as part of the 2005-2009 strategic plan to replace the Anglo-American Cataloging Rules, 2nd edition revised (AACR2r).

AACR2r was replaced because it did not provide adequate support for describing information resources in the digital age, especially those published in new formats such as online documents. In this regard, Delsey (2016) confirms that the initiative to develop RDA began intending to replace the Anglo-American cataloging rules (AACR2r) and providing a new standard for describing and accessing resources for an evolving digital environment.

The RSC, which is responsible for maintaining the standard, defines RDA as "[...] a set of data elements, guidelines, and instructions for creating well-formed metadata for library and cultural heritage resources in accordance with international models for user-centered linked data applications" (RDA..., 2023, site. HOME, our translation).

The goal of implementing RDA in the library catalog is to improve the user experience when accessing information resources. This includes facilitating discovery, retrieval, and access to relevant information. By adopting RDA, users can benefit from more consistent and accurate storage as well as more efficient access to resources (Oliver, 2021).

However, even with the benefits of having RDA as a guide in the cataloging process in libraries, it is clear that its implementation is taking a long time. Lourenço et al. (2020, p. 72) explain that much has been published about the RDA standard, "[...] but its implementation still takes time because it requires training, studies and appropriate technology, which means that it takes a long time to reach most libraries".

It is believed that a deeper understanding of RDA implementation management can facilitate the process and encourage the library community to comply with the new standard. According to Maurer and Panchyshyn (2014), the experiences reported after the implementation of RDA at the US National Library and the other partner national libraries, the National Agricultural Library (NAL), the National Library of Medicine (NLM), and 23 other libraries, showed a direct relationship between the importance of managing the implementation of the new standard and the success of RDA.

For Maurer and Panchyshyn (2014), if the library wants to make a successful transition from AACR2r to RDA, it is important to understand the important aspects that need to be addressed in managing the RDA implementation, and to know that the implementation will be done with the Machine Readable Cataloging (MARC) standard, as it will take some time in the future for the library community to develop a replacement for it.

Given the scenario outlined, which highlights the importance of RDA in the cataloging process and the need to understand the management for effective implementation of the new standard in libraries, the study sought to identify and analyze publications that addressed case studies or testimonials related to planning for the adoption of RDA. The aim is to present from these studies the relevant aspects, processes, and experiences that can contribute to the management of RDA implementation in libraries.

This research article is an excerpt from ongoing doctoral research, the central theme of which is the implementation of RDA based on knowledge management practices.

## 2 LITERATURE REVIEW

After the launch of RDA, studies and reports on the experiences of libraries that have made the transition to the new code began to appear in the literature, with the aim of presenting and sharing with the library community the necessary steps and strategies for an efficient and successful transition to RDA.

Publications on the implementation of RDA generally include, in addition to concepts and background, guidelines and deliberations that can help in planning the implementation of the standard, such as the publications by Oliver (2011 and 2021) and El-Sherbini (2013).

Oliver (2011, p. 90-104) presents three factors that play a supporting role in the transition from AACR2r to RDA, namely:

1. RDA Toolkit: online tool that provides access to the RDA standard. "As a tool of the Network, RDA prompts new ways of working with the standard, but also offers ways to facilitate the implementation of change" (p. 90).
2. Encoding and visualization of RDA data: the transition requires adjustments to MARC21 to accommodate the encoding of RDA data. "It is possible to encode RDA data with MARC21 and preserve the same display as bibliographic data" (p. 104).
3. Coordinated implementation: consists of coordinating implementation with other institutions. It is believed that coordinating decisions and sharing materials can facilitate the implementation of RDA. "The development of RDA was an international initiative, and its implementation will also be a collective activity that crosses national borders" (p. 91).

Similarly, El-Sherbini (2013), in the book "RDA: Strategies for Implementation", writes a chapter with 10 topics that guide the planning for the implementation of RDA:

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1. General tips for cataloger training.
2. Cataloger decision-making.
3. Integrating the new RDA records with the legacy records<sup>1</sup> and making the decision to re-catalog the sets of manifestations.
4. Import and RDA-based bibliographic record from the Online Computer Library Center (OCLC) to its Online Public Access Catalog (OPAC).
5. RDA and the participants in the Library of Congress Program for Cooperative Cataloging (PCC).
6. Effect of RDA on catalog viewing.
7. Strategy for implementing new MARC21 fields to accommodate the new RDA elements.
8. Adjustment of the online system to accommodate the new MARC21 fields.
9. Authority processing and RDA vendor services.
10. Access to the RDA record in the Library of Congress Catalog and in OCLC.

In 2014, the journal *Cataloging & Classification Quarterly* published a special issue, "RDA Around the World," which included 14 articles dealing with the implementation of RDA, covering different aspects and stages of planning, with very detailed reports and case studies. According to Dunsire (2014, p. 583), the articles published in the special issue contain important information "[...] for those who intend to implement RDA, review the quality of their legacy data, measure the impact of the globalization of cataloging, or prepare for training and orientation to international standards."

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<sup>1</sup> Legacy data, legacy records or inherited records are records with cataloging elements that predate current RDA practices. In other words, in a catalog where RDA has already been implemented, there may be legacy records or legacy data that do not have RDA cataloging elements (Panchyshyn; Park, 2014).

In 2017, JLIS.it Italian Journal of Library Science, special issue, v. 9, n.1, 2018 published papers presenting at the conference an overview of RDA in Europe: EURIG2017. Some topics presented in the issue deal with aspects of the implementation of RDA and its implications, for example, the translation of the new standard (Jlis.it Italian journal of Library Science, 2018).

Santos and Arakaki (2022) published a study that provides an overview of the methods, techniques, and issues raised in the literature on the implementation of RDA in Latin America. The study found reports on the implementation of RDA in the national libraries of Argentina, Chile, Colombia, and Mexico.

Thus, the literature shows that although the implementation of RDA is an important issue and of interest to the library community, there are few published articles that deal specifically with this topic. On the other hand, the few studies found are mostly reports on the experiences of libraries that have effectively implemented RDA, making them relevant and consistent.

### 3 METHODOLOGY

The study makes use of bibliographic research with a qualitative approach, as it aims to identify and analyze publications that present case studies or testimonies of the implementation of RDA in libraries, to identify the relevant aspects, processes, and experiences that can contribute to the management of the transition to the new standard in libraries.

The following databases were selected for the research Capes Portal, Scopus Elsevier, Reference Database of Journal Articles in Information Science (BRAPCI), Digital Library of Theses and Dissertations (BDTD) and Brazilian Portal of Scientific Publications and Data in Open Access (OasisBr), as they are considered to reflect the scientific production in the field, covering national and international topics and research.

The search strategy used the following descriptors: Resource **AND** Description **AND** Access **AND** Implementation and RDA **AND** Implementation. The data were analyzed through a floating reading of the studies found - Bardin's (2011) content analysis technique.

The next chapter presents the results of the bibliographic research with the qualitative analysis of the data according to the categories established.

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### 4 RESULTS

The search retrieved an overall total of 135 publications, 79 of which were on the Capes Portal, 30 on Scopus Elsevier, 13 on Brapci, 4 on BDTD and 9 on OasisBr. Of the total, 17 articles were selected for qualitative analysis because they were case studies or reports of specific experiences on implementing RDA in libraries. The selected studies were read in full to extract the aspects considered relevant to implementing RDA. The selected studies are shown in the table below:

Chart 1. Articles retrieved on implementing RDA in libraries

Item	Authors	Library/country	Approach
1	Cronin (2011)	Library of the Universidade de Chicago USA	This article reflects on the experience of testing RDA and addresses some main issues related to managing its adoption.
2	Behrens; Frodl; Polak-Bennemann (2014)	Libraries in Germany Germany	The article describes all the relevant aspects of the transition to RDA within the German-speaking library community.
3	Choi; Yusof; Ibrahim (2014)	National Library of Singapore	The authors share how the library formulated its implementation strategy and action plan, the adoption and development of the plan, as well as

			the discussions and landmark decisions taken to implement RDA.
4	Emma Cross <i>et al.</i> (2014)	Libraries all over <b>Canada</b>	This article describes the progress made to implement RDA in libraries across Canada.
5	Goldberga <i>et al.</i> (2014)	The National Library of <b>Latvia</b>	The article provides information on the implementation of RDA in the Latvian National Library.
6	Hanford (2014)	Elihu Burritt Library at Central Connecticut State University <b>USA</b>	The purpose of this study is to review the preparation and implementation of RDA at Central Connecticut State University's Elihu Burritt Library.
7	Maurer; Panchyshyn (2014)	Kent State University Libraries (KSUL) <b>USA</b>	The purpose of this study is to review the preparation and implementation of RDA at Central Connecticut State University's Elihu Burritt Library.
8	Parent (2014)	RMIT University Library (RMIT) <b>Australia</b>	This article describes the RMIT library's experience in implementing RDA and, at the same time, the investment of resources in a system change.
9	Jin; Sandberg (2014)	Library of the University of Illinois at Urbana-Champaign <b>USA</b>	This article presents a case study implemented at the University of Illinois Library at Urbana-Champaign that trained catalogers in RDA.
10	Turner (2014)	Duke University Libraries <b>USA</b>	The article is a case study of RDA training and implementation at Duke University Libraries.
11	Morris; Wiggins (2016)	Library of Congress <b>USA</b>	The process of implementing RDA by the Library of Congress, the National Agricultural Library and the National Library of Medicine is presented.
12	Wu; Guajardo; Rodriguez (2016)	University of Houston (UH) Libraries <b>USA</b>	This article discusses RDA implementation planning, system configuration, vendor collaboration, local RDA guidelines, training and communication.
13	Martínez Arellano; Santana Chavarría; De La Rosa Valgañón (2017)	National Library of Mexico (BNM) UNAM Library and Information System (SIBIUNAM) <b>Mexico</b>	This article discusses the challenges that the adoption of the new RDA cataloging standard has meant for these three UNAM entities, as well as the actions taken in each of them.
14	Quiroz Ubierna (2017)	National Congress Library <b>Chile</b>	This document reviews the experience developed by the Biblioteca del Congreso Nacional (BCN), which, starting in August 2012, generated a project for the implementation of the RDA cataloging model.
15	Aldi (2018)	Casalini Library <b>Italy</b>	It briefly presents the implementation of RDA in the Casalini library.
16	Bargioni (2018)	Libraries of the Unione Romana Biblioteche Ecclesiastiche (URBE) <b>Italy</b>	The adoption of the RDA Toolkit and the problems related to local variants, currently being examined in collaboration with the Vatican Library, are discussed.
17	El-Sherbini (2018)	Ohio State University Library <b>USA</b>	It discusses the evolution of RDA and the challenges of implementing the system.

**Source:** prepared by the authors with data from the Capes Journal Portal; Scopus Elsevier, Brapci, BDTD and OasisBr.

In general, the qualitative analysis of the content of the selected publications shows that the most frequently addressed aspects of RDA implementation can be grouped into categories. It was therefore decided to group the findings into six categories: (1) human and financial resources; (2) RDA toolkit; (3) RDA training; (4) cataloging procedures: decisions, policies and documentation; (5) preparing the library management system; (6) technological support and tools.

The identified categories are summarized in the table below, followed by an analysis of each of them according to the findings in the publications retrieved in the bibliographic research on RDA implementation, also considering the relevant theories in the field. It is believed that this allows a deeper analysis of the results obtained.

**Chart 2.** RDA implementation: relevant aspects

Categories/authors	Relevant aspects: procedures and/or actions
<b>Human and financial resources</b> Cronin (2011) Maurer; Panchyshyn (2014) Hanford (2014) Goldberga <i>et al.</i> (2014) Behrens; Frodl; Polak-Bennemann (2014)	<b>Human Resources:</b> - Librarians, technicians, and support staff <b>Financial resources:</b> - Subscription to the RDA Toolkit - Staff training - Preparation of documentation, physical and/or online material - Preparing the Library Management System • - Contracting the provision of services
<b>RDA Toolkit</b> Goldberga <i>et al.</i> (2014) Behrens; Frodl; Polak-Bennemann (2014) Maurer; Panchyshyn (2014) Cronin (2011) Hanford (2014)	<ul style="list-style-type: none"> <li>• Purchase of the RDA Toolkit by subscription: online tool providing access to the RDA standard</li> <li>• Translation of the RDA into the language of the library's country</li> <li>• Training of staff to use the tool</li> <li>• Tool usability</li> <li>• Preparation of physical and/or online material</li> </ul>
<b>RDA Training</b> Choi; Yusof; Ibrahim (2014) Jin; Sandberg (2014) Parente (2014) Cross <i>et al.</i> (2014) Maurer; Panchyshyn (2014) Turner (2014) Morris; Wiggins (2016) Wu; Guajardo; Rodriguez (2016)	<ul style="list-style-type: none"> <li>• Comprehensive and reliable sources of information on RDA for developing training content</li> <li>• Addressing relevant content: RDA; FRBR; FRAD; Transition from AACR2 to RDA; indispensable changes to MARC records; use of the RDA Toolkit</li> <li>• Organization of training in modules and for specific groups</li> <li>• Presentation of training in different modalities and formats: face-to-face and online, webinars through in-house training sessions and the need for practical, ongoing training</li> <li>• Collaborative learning environment</li> <li>• Constant review of newly created RDA records and ongoing discussion of new rules, their interpretation, and application</li> </ul>
<b>Cataloging procedures: decisions, policies and documentation</b> Maurer; Panchyshyn (2014) Parente (2014) Behrens; Frodl; Polak-Bennemann (2014) Choi; Yusof; Ibrahim (2014) Wu; Guajardo; Rodriguez (2016)	<b>Definition and function:</b> - Document containing institutional decisions regarding the cataloging process in RDA. - Understanding of RDA required - Review of existing local documentation required - Covers institutional choices regarding the various alternatives and options presented in the RDA rules - Defines the main and additional elements of RDA



	<ul style="list-style-type: none"> <li>- Guides the creation of new records, hybrid records (considering AACR and RDA) and legacy/legacy data</li> </ul> <p><b>Examples of policies:</b></p> <ul style="list-style-type: none"> <li>- Policies for original cataloging (new record)</li> <li>- Policies for copy cataloging (records imported from other libraries)</li> <li>- Policies for creating titles</li> <li>- Policies for updating records</li> <li>- Policies for hybrid records</li> <li>- Policies for authority control</li> <li>• - Policies for legacy data (records already in the catalog)</li> </ul>
<p><b>Preparing the library management system</b></p> <p>Maurer; Panchyshyn (2014) Cormenzana López; Lopez-Borrull (2018) Tuso González (2017) Panchyshyn; Park (2014) Wu; Guajardo; Rodriguez (2016)</p>	<ul style="list-style-type: none"> <li>• Encoding and adjustments to the new MARC21 fields (336, 337, 338) to accommodate RDA data encoding</li> <li>• Adaptation of the Library Management System to display RDA data in the online catalog</li> <li>• Integrating the new RDA records with legacy records</li> <li>• Checking the possibility of importing bibliographic records</li> </ul>
<p><b>Technological supports and tools</b></p> <p>Cross <i>et al.</i> (2014) Behrens; Frodl; Polak-Bennemann (2014) Hanford (2014) Maurer; Panchyshyn (2014) Choi; Yusof; Ibrahim (2014) Morris; Wiggins (2016)</p>	<ul style="list-style-type: none"> <li>• Technological tools such as wiki, websites, RDA-L. Web pages used to record, organize, document, make available and share information and knowledge about RDA.</li> </ul>

Source: prepared by the authors.

#### 4.1 Human and financial resources

The implementation of RDA will require human and financial resources to enable its development. Human resources involves a team of professionals, including librarians, technicians, and analysts. Financial resources are related to the costs needed to develop the implementation: acquisition of consumables or permanent materials, such as equipment, solutions, and/or information technologies, and subscription to the RDA Toolkit.

Regarding human resources, the studies show the need for teamwork, involving managers, librarians, assistants, and systems specialists to carry out the various services. Cronin (2011) presents the activities involved in preparing and implementing RDA, estimating the time and number of people involved. The author believes that the activities will be common to most institutions that implement RDA. The activities are listed in the table below:

**Chart 3.** Number of people and estimated time per activity to implement RDA

Implementation activities	Total number of people per activity	Estimated time
Preparing the system for RDA fields	2	5 hours
Creating test records for the system	10	20 to 30 hours
Implementing public displays for RDA records	5	10
Review of LC and PCC documentation and decision-making for local policies	13	10 hours
FRBR and RDA Toolkit training	42	5 hours



Initial RDA training	42	8 hours
Library-wide presentation on RDA	5	1 hour
NACO and BIBCO refresher preparation	15	

Source: Prepared by the authors based on Cronin (2011).

The National Library of Singapore's RDA implementation project relied on a team of 13 professionals. Of these, "[...] nine are metadata librarians who work with physical and digital materials, a bibliographic manager who operates the Singapore Integrated Library Automated System (SILAS), and three managers" (Choi; Yusof; Ibrahim, 2014, p. 609).

In terms of financial resources, it should be noted that the implementation of RDA will be costly for the institution. As Behrens; Frodl and Polak-Bennemann (2014, p. 689) describe, '[...] the implementation of RDA will certainly incur costs in the transition phase, but the sharing of data in RDA is expected to reduce costs eventually'. In this case, the authors clarify that there are costs associated with implementing RDA, but that implementation allows cataloging metadata to be shared, for example by importing records from other libraries, which could reduce cataloging costs over time.

Still on the subject of implementation costs, Maurer and Panchyshyn (2014) explain that it is necessary to distinguish between implementation costs and ongoing costs. Implementation costs include, for example, hiring library system vendors to index, display, or implement new MARC21 RDA fields; or, in extreme cases, the need to migrate from older software to a new library management system because that software may not be RDA-compliant. Ongoing costs include, for example, the purchase of an annual subscription to the RDA Toolkit.

It is important to note that to obtain financial resources, it is necessary to have the support of the institution that maintains the library, and this request for resources can be justified. Maurer and Panchyshyn (2014) explain that, for this purpose, the following costs can be justified: education, travel, supplies, tools, and staff time.

In this regard, Goldberga et al. (2014) describe that in Latvia, additional financial resources were used to purchase the annual license for the RDA toolkit. In the case of the National Library of Latvia and other academic libraries in the country, these expenses can be included in their budgets, but not in the case of public libraries.

Regarding the option of subscribing to the RDA Toolkit or purchasing the print version, Cronin (2011) describes that they have chosen to subscribe to the online version from the beginning. Explaining the reasons for this, the author explains that the option to purchase the print version may seem cheaper at first, but over time there is no way to measure the cost of purchasing updates to that version. There is also no way to assess the cost of not having access to the benefits of the online format, the RDA Toolkit, such as links between RDA instructions and Library of Congress Policy Statements (the successor to Library of Congress Rule Interpretations), between RDA and MARC documentation. The author emphasizes that subscribing to the online version is more advantageous than subscribing to the print version because the RDA Toolkit is accessible on the cataloger's desktop.

Similarly, Hanford (2014) explained that although the print version of RDA is less expensive, they subscribed to the online RDA Toolkit because of the up-to-date information and additional resources, such as Library of Congress policy statements and shared mappings and workflows.

In addition to the costs of purchasing the RDA Toolkit, training staff, developing physical and/or online materials, and preparing the library management system, some studies have reported the need for authority to control costs in the implementation process.

Maurer and Panchyshyn (2014) make the observation that authority control costs increase with the implementation of RDA. In the authors' experience, this is due to the increase in staff time required to maintain these records. First, this is temporary, as the new RDA titles also generate longer title reports and split header lists for staff to clean up. Second, it takes longer to create the RDA authority record due to the increments required by the new standard to create the record.

The cost of authority control is also mentioned by Hanford (2014), who explains that to implement RDA, they included special RDA authority processing provided by the library system

vendor, Library Technologies Inc. who offered this service for free, but it required the creation of a new bibliographic file base and the receipt of new authority records, which resulted in costs.

In terms of reducing the cost of the implementation process, Cronin (2011) describes how using existing training materials reduced local costs because they did not have to develop their own materials. Instead of investing resources in training, they focused their efforts on defining and integrating local policies and practices into the training program.

In summary, the studies indicate that the implementation process involves costs for the library and/or sponsoring institution. There will be ongoing costs, such as if the library decides to subscribe to the RDA Toolkit. And there will be one-time costs specific to the RDA implementation process, such as hiring a library software vendor to implement improvements to the library's management system or hiring outsourced staff to perform a cataloging process.

#### 4.2 RDA Toolkit

The basic requirement for implementing RDA is the purchase of the standard, either in print or as an online subscription. The difference between the printed RDA and the RDA Toolkit is that the online tool provides access to up-to-date RDA instructions and guidelines (Oliver, 2021).

If the institution chooses to subscribe to the RDA Toolkit, there are two issues to consider: the first is cost, as the tool is available on a subscription basis. The second is language. The online tool is officially published in English, but there are translation agreements with external organizations in different languages to translate and ensure the quality of the RDA. These RDA translations become printed publications and/or can be made available on the online tool in the RDA Toolkit (RDA Steering Committee, 2016).

Regarding the language used and the need to translate the RDA, the study presented by Goldberga et al. (2014), which reports on the implementation of the RDA in Latvia, concluded that countries whose official language is not English face significant challenges when approaching the translation task, such as "[...] the need for new national terminology, awareness of linguistic and cultural differences, and the need for national samples, manuals, and training materials in the official language of the state" (Goldberga et al., 2014, p. 219).

The authors explain that "[...] translation is a deeply psychological process. Each translated word will have a special meaning in the culture of the nation and in the manifestations of human consciousness and unconsciousness" (Goldberga et al., 2014, p. 211, our translation).

To aid in the translation process, the RDA glossary includes many terms that are found in AACR2 and ISBD, along with their respective explanations. However, the new standard introduces new terms that have not been used before. In this case, it is important to note the differences between AACR2 and RDA terms and their respective translations. For example: "main entry" (AACR2) and "preferred title" (RDA); "heading" (AACR2) and "authorized access point" (RDA); "author, composer, illustrator, etc." (AACR2) and "creator" (RDA); "general material designation (GDM)" (AACR2) and "content type, media type, and carrier type" (RDA). Determining the contextual definition of terms in RDA is essential to their accurate reproduction:

In the translation process, it is important to consider the correct and appropriate terminology so that the term chosen in its consistent sense can be used throughout the document, as well as in other interrelated documents. For example, there is no simple and accurate translation for the term "extra/super/giant print" in Latvian; the term "declaration of manufacture/production" in Latvian has many meanings; there is no Latvian equivalent for the term "unmediated" (Goldberga et al., 2014, p. 211, our translation).

Goldberga et al. (2014, p. 219) also believe that to implement the RDA, "[...] it will be necessary to ensure adequate human and financial resources. It is advisable to set up working groups to research and implement the RDA, and also to develop an appropriate strategy".

Still from the perspective of the need to translate the RDA, the study by Behrens; Frodl and Polak-Bennemann (2014, p. 697) shows that for libraries in Germany, a "[...] fundamental

prerequisite for the use of the cataloging code was the availability of the RDA standard in English and in German translation". The German translation of RDA was produced by the Deutsche Nationalbibliothek (DNB), which "[...] faithfully followed the English original; it aimed to make the new standard accessible and understandable to the specialized German-speaking community". To provide access to the standard, the authors say that since 2012, "[...] the German translation of the text of the RDA cataloging code has been available free of charge for one year on the DNB website in the form of Portable Document Format (PDF) files." The authors also report that "[...] the German text and a German user interface were made available in the RDA Toolkit in mid-May 2013". However

[...] Cataloging staff in Germany, Austria, and the German-speaking part of Switzerland should always consult the English version of the RDA in their work, as this represents the most up-to-date version because there is always a delay in synchronizing the translation (Behrens; Frodl; Polak-Bennemann, 2014, p. 697, our translation).

Regarding the cost-benefit of purchasing RDA standards in print or online, Maurer and Panchyshyn (2014, p. 267) note that the RDA Toolkit operates on an ongoing annual subscription-based payment model. "[...] Print access is still available and less expensive than online access." However, the studies show that purchasing the RDA Toolkit on a subscription basis is considered an advantage for implementing RDA in libraries.

In this regard, Cronin (2011) describes the RDA Toolkit as presenting updates to the RDA standard in an integrated and centralized way. It supports a place to create workflows, i.e., it integrates all the library's local cataloging procedures into the tool, centralizing local documentation and taking advantage of the functionality of dynamic links between the library's documentation and RDA instructions, LCPSs, MARC, and the like. It is also possible to share local documentation with the entire toolkit community. The author emphasizes that the choice of the Toolkit online tool at the University of Chicago Library has helped the team network. "The potential to support cost sharing and cost savings is there, and time will tell if that potential is realized" (Cronin, 2011, p. 638, out translation).

Regarding the usability of the RDA Toolkit, Hanford (2014, p. 159) reported that she initially found that "[...] working with the RDA Toolkit was sometimes frustrating in terms of content and navigation". But their overall impression was positive, due to "[...] the prospect of having the RDA guidelines in a searchable database with tabs and hyperlinks to valuable and supportive documentation and workflows". The author notes that "[...] it takes some effort to change years of practice using the format-specific layout of AACR2 to think in terms of the FRBR layout of the RDA Toolkit. I wasn't as familiar with RDA and FRBR as I thought I was". Another relevant aspect mentioned by the author is the cataloging examples included in the workflows in the online tool guide, which she found useful. However, the author felt that there was a lack of "[...] more variety of examples for audiovisual formats" (Hanford, 2014, p. 159).

The difficulty of navigating the online RDA toolkit is also mentioned in the Cross et al. (2014, p. 756) study: "Some challenges cited by all types of libraries were the difficulty of getting used to navigating the RDA Toolkit [...]"

In short, it can be said that despite the cost of acquiring the subscription mode, this type of contract is considered by the studies to be the most interesting and can bring benefits if we analyze the possibilities that the online tool offers that go beyond the RDA instructions, such as access to updates, easy access to the rules and integration of all the library's local procedures within the tool, LCPSs, MARC and the like.

Translation is a challenge for countries that use a language other than English. The translation needs to consider the cultural and linguistic aspects of the country and can use IFLA-LRM, AACR2 and ISBD publications as a reference if they have already been translated into the country's language. It is important that the process of translating the RDA standard is carried out in collaboration with interested institutions, partners, or countries sharing the same language.

### 4.3 RDA training

From the analysis of the studies, it is clear that training for RDA implementation in libraries is an essential component that is constantly evolving and full of challenges. RDA training includes training for professionals who are directly or indirectly involved in the library. This means that the training extends to librarians who work with cataloging, reference services, assistants, users, etc.

In order to understand the development of the RDA implementation training adopted in the studies analyzed, it is first necessary to present the fundamental role played by the Library of Congress, both in the RDA development process and in the effective application of this new standard in its catalog, and also as a source of information on RDA, capable of promoting learning through the dissemination of knowledge to the library community.

Regarding the role of the Library of Congress - LC - in the development of RDA, Morris and Wiggins (2016) explain that the Library of Congress, along with other libraries (American Library Association - ALA, British Library, Canadian Committee on Cataloging, Chartered Institute of Library and Information Professionals - UK, and National Library of Australia), collaborated and actively participated in the development of RDA. LC led the project to test RDA for cost-effectiveness, ran a training program for staff in the use of RDA, and worked with other institutions both in preparation for implementation and in ongoing follow-up.

Preparation for the implementation of RDA at LC was also a collaborative effort with "[...] two other U.S. national libraries-the National Agricultural Library and the National Library of Medicine-the Program for Cooperative Cataloging and its hundreds of member institutions, the American Library Association Publishing Group, and the private sector library vendor and training community" (Morris; Wiggins, 2016, p. 200).

Regarding training for RDA implementation at LC, Morris, and Wiggins (2016, p. 221) describe that LC "embarked on a very ambitious program to train its staff in the use of RDA and the interpretation of RDA records, a necessary skill for reference librarians." LC developed the training program and materials, summarized below:

- Extensive training for all employees: around 50 employees trained in the summer of 2010. A further 450 employees trained between October 2012 and March 2013.
- Method: 10 courses were developed separately, conducted in person and online.
- Workload and physical structure: 36 teaching hours spread over four weeks and three classrooms with 20 participants each, three days a week.
- Content approach for the course: Fundamentals of Functional Requirements for Bibliographic Records (FRBR); detailed instruction on RDA; RDA Toolkit with extensive hands-on time; plus six hours of name authority practice and review of authority instructional webcasts.
- Post-implementation:
  - Additional course "Copy cataloging using RDA", emphasizing the need to develop and apply cataloger judgment in processing imported records. Presentations on the impact of RDA for public service employees from the user's perspective.
- Different formats for course materials: Microsoft Word manuals, PowerPoint presentations and online quizzes, shared on the website for catalogers.
- Specific training for Library of Congress offices abroad (Cairo, Islamabad, Jakarta, Nairobi, New Delhi and Rio de Janeiro):
  - Tools, modality, and format of the training for the six offices: iCohere - online learning and collaboration platform; virtual training for approximately 100 employees; live, asynchronous, and individualized learning; discussion forums; and e-mail for clarifications.
  - Content: FRBR concepts, RDA Toolkit, NACO authority work and descriptive and journal cataloging.

- Results of training in foreign offices: the blended learning approach was found to be engaging and interactive.
- Accessible online training: The developers of the training materials made special efforts to ensure that the course materials on the website were accessible to users with physical disabilities. The online training was also used by the Library's hearing impaired staff, some PCC institutions, and the Library's audiovisual and moving image cataloging staff working at the National Audio-Visual Conservation Center in Culpeper, Virginia.
- Making the materials available online worldwide: Training materials were made publicly available to encourage implementation. The materials were made available on a public website to broaden access and promote learning. This practice helps disseminate knowledge on a global scale.
- RDA Remote Learning Program: LC distinguished itself by offering the first remote RDA learning program. The program was implemented on a large scale, covering the institution's overseas offices and providing a dynamic learning experience.

In general, the other studies analyzed follow the same LC approach to organizing the training program. Many of the studies use LC-produced training materials that are available online for support, such as the University of Houston Libraries team.

According to the study presented by Wu, Guajardo, and Rodriguez (2016, pp. 172-173), the RDA training for the University of Houston Libraries staff was implemented in several ways. First, an RDA training plan was created that included basic and advanced levels, and Amigos Library Services delivered the sessions. Of the formats used, the personalized two-day live webinar proved to be the most effective. In terms of content, the training focused on the RDA bibliographic description rules and the RDA toolkit. In addition, the staff training included LC's online RDA training modules, which were considered essential because of the variety of resources, including videos, slides, handbooks, exercises, and quizzes. Catalogers attended two live webinars on RDA Name Authorities, one of which was "RDA in NACO Training" sponsored by the Program for Cooperative Cataloging (PCC). Online group sessions were scheduled to cover specific topics such as the "[...] use of new RDA fields in MARC, recording attributes of persons, surnames, and legal entities in RDA authority records, and topics related to works, expressions, manifestations, and items (WEMI). The team also took short quizzes available on the PCC training website, participated in discussions about training topics, and watched the Association for Library Collections and Technical Services (ALCTS) webinar "RDA for the non-cataloger: what's in it for you? Although the webinar was designed for public-facing staff, much of the content covered MARC fields and codes and enriched catalogers' knowledge of RDA.

It can be seen that training is a fundamental part of implementing RDA. It requires effective planning that considers variables such as organizing for specific groups, reliable sources for preparing content, defining and approaching relevant content, employing training with different modalities and formats, and creating an environment conducive to collaborative learning.

Regarding the importance of training in the implementation of RDA, Choi; Yusof and Ibrahim (2014, p. 611) described that "[...] staff training was identified as a priority area in the RDA action plan". The team recognized that to ensure an effective and smooth transition, considerable time and effort would need to be invested.

In terms of providing training to specific staff and/or groups, Danskin (2014) describes that at the British Library, training was considered the most intensive aspect of the initiative. As a strategy for organizing the training, they chose to design it for three different types of groups to meet the needs of specific groups of staff, such as: training for the faculty, for the processing team made up of different professionals, and for the catalogers.

Similarly, the University of Illinois at Urbana-Champaign (UIUC) Library, faced with the diversity of staff profiles, including catalogers from different libraries, with different skill levels and areas of expertise, using different cataloging tools, saw this as an opportunity to create a "[...] learning atmosphere where catalogers felt motivated to ask each other questions and learn



together" (Jin; Sandberg, 2014, p. 221, our translation). The authors also noted that the teams were divided into two groups according to the types of documents to be cataloged: monographic and serial documents.

In terms of content, Parente (2014) mentions that the training at RMIT focused on FRBR rather than the comparison between RDA and AACR2, "[...] but omitted the authority components of RDA. The author believes that the FRBR approach developed the team's familiarity with the language of RDA and may have helped with the direction of the toolkit" (Parente, 2014, p. 794).

Jin and Sandberg (2014) describe the actions taken to promote RDA training at UIUC, which can be classified according to the approaches: relevant content, training for specific groups, different formats, collaborative learning environment, as follows:

- relevant content:
  - concentration on the application of FRBR entities training, RDA principles;
  - the main differences between AACR2 and RDA and practical exercises;
  - specific training on the RDA Toolkit in two sessions;
  - thematic approach on the theoretical motivations of RDA, with the aim of presenting the importance of the changes in the new cataloging code and how it can be better used;
  - Design a specific training session to discuss the topic (because RDA is based on IFLA-LRM).
- training for specific groups:
  - specific training on RDA for reference librarians and subject specialists.
- training in different modalities and formats:
  - expansion of webinars through in-house training sessions.
- collaborative learning environment
  - sharing of materials, i.e., materials shared by the Library of Congress and other libraries have been reused, and new training materials have been developed for UIUC catalogers, which can also be shared with other libraries via access to the institution's website;
  - provision of internal channels, such as a wiki, for catalogers to ask questions while creating bibliographic records and to share internal information about cataloging in RDA;
  - hands-on experience, with the cataloging of records in RDA starting immediately after the training.

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Choi, Yusof and Ibrahim (2014, p. 611-613) detail the implementation of RDA at the National Library of Singapore, highlighting the development of a comprehensive training plan. This plan involved searching for online and printed training materials, identifying facilitators and conducting training in phases. Each phase was targeted at specific groups of staff: project team members and managers, librarians and, finally, library officers. Some aspects were highlighted by the authors, such as:

- Comprehensive and reliable sources of information on RDA: the need to search for reliable sources to develop the content. However, there were two issues: too many materials available on the web and the dynamic nature of these materials, which were constantly being updated. The solution was to use comprehensive and reliable sources of information, such as the LC RDA portal (<http://www.loc.gov/aba/rda/>) and Adam L. Schiff's website (<http://faculty.washington.edu/aschiff>). Schiff<sup>2</sup>.

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<sup>2</sup> "[...] Adam L. Schiff. Schiff has been the lead cataloger at the University of Washington Libraries since April 1997. He has published and presented extensively on RDA and Anglo-American Cataloguing Rules, Second Edition (AACR2) throughout his career [...]" (Choi; Yusof; Ibrahim, 2014, p. 612).

- Training in modules and organized for specific groups: the training was designed to categorically meet the needs of the various staff groups in modules, namely librarians and library officers.
- Relevant content:
  - All RDA content was passed on to all groups, recognizing the need to familiarize the team with the essential concepts of RDA, the indispensable changes to MARC records and the search for greater accessibility, with a view to ensuring that everyone involved was aligned with the principles and standards of RDA, maintaining consistency in its application.
  - Functional Requirements for Bibliographic Records (FRBR).
  - Functional Requirements for Authority Data (FRAD).
  - Fundamental principles of RDA.
  - Transition from AACR2 to RDA.
  - Using the RDA Toolkit.
  - Cataloging copies with RDA.
- Training with different modalities and formats: “[...] training was a combination of classroom training, study group and webinars” (Choi; Yusof; Ibrahim, 2014, p. 613).
- Important points: “[...] the need for continuous hands-on training; constant review of the newly created RDA registers, and continuous discussion of the new rules, their interpretation, and application” (Choi; Yusof; Ibrahim, 2014, p. 613).

Turner (2014) also reports on the Duke University Libraries' experience with RDA implementation training. Briefly, they began with authority records training offered by the Program for Cooperative Cataloging - Name Authority Cooperative (NACO) RDA for current NACO participants, followed by bibliographic training for the larger group. "The NACO course was in the format of videos and slide shows that catalogers watched at their workstations and then met for discussion (Turner, 2014, pp. 71-72)." the authors much appreciated this format. The total training time for 19 monographic catalogers was eight and a half hours. Journal catalogers had a separate training program. In terms of content, the training covered the overview and application of FRBR (understanding the conceptual relationships) and RDA (a brief introduction presented by Chris Oliver). A cost-benefit analysis was presented at the end. In terms of costs, the amount of time needed to develop and implement RDA was considered incredible. Regarding the benefits, it was understood that most of them would be determined at some point in the future.

Cross et al. (2014) stated that training in RDA, whether formal or informal, is the starting point for implementing the new standard. The authors describe the differences found in the RDA training experiences of the English-speaking and French-speaking cataloging communities in Canada, and conclude that both communities prefer face-to-face training to other available resources. But they all understand that "[...] expertise needs to be developed in adapting training materials for the online environment. What is appropriate for face-to-face training may not automatically work in a webinar or as an online course (Cross et al., 2014, p. 769)". These authors believe that to improve training in RDA, it is necessary to understand how to take full advantage of the online environment to provide competent, participatory training that achieves peer engagement.

Regarding the preference for face-to-face training only, Parente (2014), in the implementation of RDA at the University of Melbourne (RMIT) in Australia, states that the training was conducted internally within the institution and with small groups that received positive feedback, which made it possible to confirm this process as a successful implementation strategy.

In a concise and didactic manner, El-Sherbini (2018, p. 68) reports that the training at the Ohio State University Library "[...] consisted of weekly workshops that included hands-on training and many quizzes. Each week was devoted to only one module so that catalogers had ample time to practice. The training included a final exam and certificate of completion for each cataloger.



At Kent State University Libraries (KSUL), the process of establishing team learning was different. Catalogers worked as a team to train each other in RDA, with the goal of reaching consensus decisions to understand the how and why of the standard. This strategy contributed to necessary management, training, cataloging, and other decisions (Maurer; Panchyshyn, 2014).

However, Maurer and Panchyshyn (2014) add that their experience in the RDA implementation process has shown that intensive training is not necessary, but they believe that the ideal training is one that is distributed over time and delivered appropriately so that catalogers feel comfortable making the transition to RDA.

In addition to the studies reviewed, other texts on RDA implementation recommend structuring training to expand modalities, whether face-to-face or distance learning, and exploring different formats, such as webinars and e-learning. It also emphasizes the importance of creating a collaborative learning environment in the process of adopting RDA.

Regarding the collaborative learning environment, Cooperative Online Serials (CONSER), which is responsible for implementing RDA at the Library of Congress, described how the CONSER RDA Forum Website was created to facilitate document sharing and discussion among participants about the new standard. According to Bross, Hawkins, and Nguyen (2013), this environment allowed training to be delivered in various formats, including webinars, recorded videos, and individual study materials used during the training course.

Regarding remote or face-to-face training, Holanda and Lourenço (2021) surveyed catalogers at the Federal University of Minas Gerais, Brazil, and the results indicated that catalogers preferred face-to-face training and, as content, they preferred the changes related to RDA and AACR2. However, the authors describe that "[...] distance learning training may be a reality that will not disappear due to the Covid-19 pandemic that spread in 2020 and brought behavioral changes that affect daily life, communication, and access to information" (Holanda; Lourenço, 2021, p. 19).

In addition to the points discussed in the training, it is important to consider whether what was taught was assimilated and correctly applied in practice. Martínez Arellano, Santana Chavarría and De La Rosa Valgañón (2017, p. 5) consider that the training of the team for the implementation of RDA in the Library of Mexico was continuous, through workshops and lectures: "[...] in practice, however, there must be supervision or quality control to know if the procedures and policies established are being applied".

Finally, the studies presented point out that training is fundamental to the implementation of RDA and is considered the starting point of the process. It is advisable to make training available in different modalities and formats, such as face-to-face, remote, videos, and webinars. In addition, it is important to design training for different audiences, such as librarians, assistants, and users. It is also necessary to consider the practical application of what has been learned to reinforce learning. Promoting a collaborative learning environment is also important to facilitate the sharing of documents, discussions, and decisions.

In terms of the content to be taught in the training, it is important to consider reliable sources of information for creating content and to focus on relevant approaches such as AACR2r, IFLA-LRM, RDA and the RDA Toolkit. It is essential that the team involved has a solid knowledge of these topics. This comprehensive mastery will ensure an effective transition to RDA in the library catalog.

#### *4.4 Cataloging procedures: decisions, policies and documentation*

El-Sherbini (2013, p. 61) explains that "RDA contains many instructions that refer to cataloging institutions' decisions," such as choosing the type of description (comprehensive, analytical, or hierarchical); deciding how to handle transcription elements (transcribe as found in the resource or according to RDA guidelines for transcription or according to internal policies); and how to handle the alternatives included in various RDA instructions (optional omissions and optional additions) that are left to the cataloger's discretion. The author adds that "[...] it is important for cataloging departments to develop local policies to deal with specific cases" (El-Sherbini, 2013, p. 61).

The decisions required for the cataloging process in RDA need to be documented in the form of policies, which are developed or adapted according to the requirements of RDA to meet the library's cataloging process. According to Selbach et al. (2020, p. 729), RDA cataloging "[...] requires staff to make decisions and record them in institutional documents so that the process follows a single standard in day-to-day practice".

When the Library of Congress (LC) Program for Cooperative Cataloging (PCC) decided to implement RDA in 2013, the first step was to "[...] identify the implementation issues that require PCC decisions about the name, authority, and bibliographic aspects of RDA. Thus, working groups were formed to "[...] make recommendations on best practices for the creation of RDA records, the application of optional instructions, and the core RDA elements of the CCP". The Cooperative Online Serials (CONSER) Standard Record Task Group "[...] was the group charged with making recommendations to resolve the differences between the CONSER standard record requirements and the core RDA elements" (Bross; Hawkins; Nguyen, 2013, pp. 211-212).

Bross, Hawkins, and Nguyen (2013, p. 213) explain that CONSER decided that the process of implementing RDA at the Library of Congress would begin with the identification of issues, which required decisions by the PCC on naming authority and bibliographic aspects. As a result, three documents were created: the CONSER RDA Core Elements, the MARC21-to-RDA Core Elements, and the CONSER RDA (Cataloging Checklist), and these materials were used in training. This foundational documentation has been incorporated into the RDA Toolkit. "The CONSER RDA Cataloging Checklist is a common workflow with hyperlinks to instructions related to RDA, LC-PCC Policy Instructions, and the Machine Readable Cataloging Encoding (MARC).

Since then, some studies analyzed have mentioned that they have adopted or used the LCs-Program for Cooperative Cataloging Policy Statements (LC-PCC PSs), which is the cataloging policy of the Library of Congress, as an example, the KSUL library justified that it decided to use the rules of the LC-PCC PSs, available in the RDA Toolkit, as a basis for decision-making.

Thus, the reviewed studies show that, in addition to using the LC-PCC PSs as a reference, the starting point for creating cataloging policies is an understanding of RDA and a thorough review of existing policies for cataloging library resources before RDA.

In terms of understanding RDA and reviewing local policies before RDA, Danskin (2014, p. 191) describes that in the process of implementing RDA at the British Library, "[...] training was complemented by a comprehensive analysis and review of existing documentation." In this case, it was only after the training that the team was able to evaluate and revise the supporting documentation for cataloging. The author explains that policies and decisions were documented in workflows created and maintained by the team itself.

Similarly, Maurer and Panchyshyn (2014) describe that at KSUL, after the initial training was completed, the implementation process focused on the consistency of cataloging practices, which resulted in a set of comprehensive and well-documented decisions. In this regard, the authors explain that managers and staff decided to make policy decisions regarding RDA. The policies developed were as follows: cataloging and authority policy for new records, policy for hybrid records (AACR and RDA), authority policy for hybrid records (AACR and RDA), and policy for legacy data.

In the same vein, Parente (2014) describes how the RMIT Library began with a minimal policy that considered, for example, the RDA description type and core elements of the RMIT manifestation level, and was accessed through management participation in the Australian Cataloging Committee (ACOC) in accordance with national library policy. This policy was refined as training and implementation progressed. The authors describe the development of the cataloging policy as a work in progress, developed after the training sessions, which had the advantage of discussing the role of cataloger judgment in RDA.

Behrens, Frodl, and Polak-Bennemann (2014, pp. 695-696) provide a relevant account of the process of developing a cataloging policy for libraries in Germany. In general, the cataloging policy included "[...] orientation to the current standard, the international exchangeability of data, and the cost-effectiveness of registration with cataloging institutions".

The authors emphasize that in some cases, the German linguistic and cultural context made it necessary to make adaptations to some GDR instructions included in the policy. Such adaptations have been made only in cases where the RDA guidelines do not provide adequate guidance or are inadequate, and where none of the LC-PCC PSs (Library of Congress Program for Cooperative Cataloging Policy Statements) apply. For the various alternatives and additional options presented in many of the GDR rules, it was decided to find a uniform solution for German-speaking countries. In this way, a single entry for all RDA options and alternatives was introduced into the cataloging policy. However, to ensure smooth data exchange, the decisions of the other national libraries of the Joint Steering Committee (JSC) were considered in cases where an option or alternative to an RDA instruction was to be accepted or rejected (Behrens; Frodl; Polak-Bennemann, 2014).

Behrens, Frodl, and Polak-Bennemann (2014, pp. 695-696) configured the German cataloging policy as follows:

- Analysis of RDA instructions and LC-PCC PSs: Based on the criteria provided, all RDA-specific instructions and, where applicable, LC-PCC PSs were subjected to a one-time working group analysis.
- Identification of problematic topics: the general topics identified that could not be assigned to a specific RDA instruction were collected in a “topic holder” and worked on separately by experts in the thematic subgroups.
- Analysis and definition of core and supplementary elements of RDA: Before the RDA standard was fully implemented, the core elements of RDA and the supplementary elements were analyzed. Together, they form the set of standard elements for German-speaking countries, called the "Standardelemente-Set für den deutschen Sprachraum," which represents a mandatory minimum standard for cataloging in German-speaking countries.
- Summary of the Cataloging Code: The summary of the Cataloging Code has been prepared chapter by chapter, except for the chapter on authority data.
- Policy proposals: all proposals were discussed in the RDA Working Group and then submitted to the Library Standards Committee for approval.
- Changes to internationalize the RDA standard: RDA instructions that are subject to a uniform change to increase internationalization have been introduced annually as part of the RDA revision.
- Need for Detailed Explanations: The need to provide helpful explanations or detailed examples was identified for some RDA instructions. "These explanations are key components for the training materials" (Behrens; Frodl; Polak-Bennemann, 2014, p. 697).
- Documentation of results: all results were recorded on a wiki working platform of the German National Library to ensure transparency at all stages of the project as well as their usefulness in case of further work.

Similarly, Choi, Yusof, and Ibrahim (2014) discuss the development of "the FRBR and its display of bibliographic records in the online public access catalog (OPAC)" (Choi; Yusof; Ibrahim, 2014, pp. 613-614).

Regarding the selection of core elements for describing resources in RDA to be included in the NBL cataloging policy, Choi, Yusof, and Ibrahim (2014, p. 613-615) described that the core elements can facilitate user tasks as specified in the FRBR. In this way, they decided on all the core elements as stated in the RDA. The authors justify that the RDA presents a set of elements identified as core. These core elements of RDA are consistent with the FRBR, considering the value of each attribute and the user tasks, namely: identifying and selecting a manifestation; identifying works and expressions embodied in a manifestation; identifying the creator(s) of a work. These elements are also consistent with FRAD's assessment, considering the value of each attribute and relationship in supporting the user and their tasks: locating a person, family, or corporate entity associated with a resource; identifying a person, family, or corporate entity.

In terms of local practices and current guidelines, the authors explain that to create the policy, the team involved first needed to understand RDA and the Library of Congress-Program for Cooperative Cataloging Policy Statements (LC-PCC PS), i.e., the cataloging policy of the Library of Congress. Consulting the LC-PCC PS was necessary because the library applies some rules from the LC-PCC PS to meet its local needs when cataloging in AACR2. "For example, about the Library of Congress Name Authority (LCNA), the NLB chooses to apply the LC-PCC PS when registering attributes of persons, families, and corporations" (Choi; Yusof; Ibrahim, 2014, p. 614).

In summary, cataloging policy in RDA documents institutional decisions regarding the cataloging process. Some studies used as a source of information or reference policies from other institutions available on the Internet, such as the Library of Congress Cataloging Policy and/or the Online Computer Library Center (OCLC).

The studies reviewed indicate that cataloging policy development begins with an understanding of RDA, followed by a thorough review of local documentation and/or existing decisions in the library's cataloging process to make decisions about cataloging in RDA.

In terms of the elements that should be included in an RDA cataloging policy, the document covers a wide range of decisions, from institutional choices in light of the various alternatives and options presented in the RDA rules, to the definition of major and minor elements for creating records. It also includes guidelines for the creation of hybrid records (considering AACR and RDA) and legacy data.

Regarding the structural organization of the guidelines, it is recommended to follow the RDA structure. However, it is important to note that some catalogers experienced in AACR2 may find it easier to follow the organization of the policy, which follows the format of the paper.

#### *4.5 Preparing the library management system*

Implementing RDA requires the use of appropriate tools and systems, i.e., cataloging software that is compatible with the new standard.

Authors Oliver (2011), El-Sherbini (2013), and Mering (2014) describe the need to integrate RDA guidelines into library management systems and online catalogs. In other words, software vendors need to adapt the system for cataloging in RDA, as well as for viewing records in the online catalog, with RDA requirements in mind.

Regarding the coding or metadata standard (MARC or BIBFRAME) in the library management system for implementing RDA, Cronin (2011) explains that until there is an effectively developed replacement for MARC, the new RDA elements should be incorporated into the new MARC21 fields. Systems must also be prepared to display and manipulate these elements.

Thus, library management system preparation, essentially consists of coding and inserting the new MARC21 fields (336, 337, 338) to accommodate the new RDA elements (support, content, and media) and adjusting the display of these same elements in the library's online catalog (Oliver, 2011).

Library management system vendors can also provide programming or workarounds for RDA-related issues such as: spelling, abbreviations, punctuation, capitalization, separation of language codes in the MARC041 subfield "a" tag, incorrect indicators, fixed field values, and various other validation errors (Parent, 2014).

Wu, Guajardo, and Rodriguez (2016, pp. 166-170) report that the University of Houston Libraries developed a plan and strategy for the RDA implementation process. Regarding the preparation of the library management system, in addition to importing the new RDA records into the system, the plan included converting authority titles for existing bibliographic records to RDA and updating records to include RDA enrichment elements. In summary, the configuration of the library system for the University of Houston involved

- Work with vendors to adapt the library system to the new 33x fields (336, 337, and 338).

- Adopted the vendor's ready-made service for bibliographic and authority records in RDA.
- Reviewed and modified more than seventy bibliographic and authority record profiles, including those not actively used. Annotation and dating of load profiles modified for RDA purposes.
- Automatic processing for authority records: purchase of Automatic Authority Processing (AAP) from Innovative Interfaces. "[...] for an RDA project, AAP serves the purpose of retroactively converting AACR2 titles into bibliographic records when these titles are recorded in 4xx fields of RDA authority records" (Wu; Guajardo; Rodriguez, 2016, p. 166).
- Local enhancement with icons for the codes by material type (336; 337; 338). Develop a set of specific material type codes with corresponding icons (visual icon); adapt to RDA requirements, replacing General Material Designation (GMD) with categories such as: content type, media, and support.
- Additional parallel project to redesign the "Advanced Search" page of the online catalog, starting with the display and layout of the expanded list of terms by material type. A "Formats" display table was created that lists all terms by material type in alphabetical order. This allows users to select the material types to narrow or broaden their search.
- MARC record cleanup: exclusion of records provided by vendors for acquisition purposes.
- RDA enrichment of legacy data: RDA enrichment for bibliographic and authority data was implemented concurrently by the vendor MARCIVE, Inc., which also made additional modifications based on feedback from earlier testing. The changes "[...] included adding 33x fields, changing GDM to a note field, replacing field 260 with field(s) 264, spelling out abbreviations, and aligning authoritative titles with RDA authority records". Because the goal is to minimize unwanted changes, "[...] the options for some important changes are controlled by the vendor for data integrity purposes at the field or subfield level" (Wu; Guajardo; Rodriguez, 2016, p. 171).
- In-house RDA enrichment for e-book and e-journal records: as a cost-effective measure, and due to the inconsistent quality and completeness of the vendor-provided cataloging for electronic resources, it was decided to perform in-house RDA database enrichment for e-book and e-journal records.

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Thus, the studies strongly suggest that the new MARC fields (336; 337; 338) can be considered the starting point for preparing the library system. Cormenzana López and Lopez-Borrull (2018, p. 15), in their study, pointed out the necessary points for implementing RDA with MARC, starting the process with the creation of new MARC21 fields and the redefinition of existing ones. "The data remain in the same database and the library's information systems are maintained, simplifying the migration process, the coexistence of RDA and pre-RDA records, and the continuity of the library management system. The authors make it clear that it is essential for institutions to define their specific cataloging criteria for different types of materials from the outset, since the RDA guidelines provide various options and assignments for content that are at the cataloger's discretion.

However, it is important that the library management system is capable of receiving RDA changes and applications; otherwise, implementation may be hindered. As described by El-Sherbini (2018), one of the main challenges in implementing RDA is related to current library management systems and their inability to display RDA records properly.

In this regard, the study by Tusó González (2017, p. 14) reports on the implementation of the RDA standard in libraries in Colombia and states that "[...] in the first instance, if the bibliographic software and its developers do not guarantee the application of relationships in bibliographic records and in the RDA model, we can say that it is not guaranteed". The author points out that



- Most bibliographic software has not yet been adapted to the changes and applications of the RDA standard.
- The IFLA-LRM conceptual models are not applicable to current software design and development.
- It is necessary to involve the library community with the bibliographic software industry in the development of the implementation of RDA for the development of these changes and the precise configuration of a SIBs (Integrated Library System).
- In general, software vendors lack knowledge of the changes and how to apply the RDA standard.
- Some software vendors are unable to respond to requests for changes needed to apply the RDA standard.
- There are no relationships between the work, expression, and manifestation models when filling out the registration as required by the IFLA LRM.
- OPACs, online catalogs, may not display MARC information correctly.

Another issue related to the library management system is the revision, updating, and migration of existing metadata from the previous code (AACR2) to the RDA format. This issue is considered important and challenging because it involves updating the database with the enrichment of legacy data and the creation of hybrid records with the implementation of RDA (Panchyshyn; Park, 2014).

Panchyshyn and Park (2014) defend the enrichment of legacy data by describing that RDA enrichment projects are directly linked to the library's strategy for implementing the new standard. The library's application of RDA enrichment aims to improve the quality of the data, make it more portable, and facilitate its integration with modern cataloging and discovery initiatives.

RDA enrichment projects can bring benefits and opportunities to the library. As shown by Panchyshyn, Park (2014), there are benefits to having an RDA enrichment project in libraries, such as

- Consistency of RDA data:
  - Make it easier for vendors to upgrade their library management system for customers.
  - Consistent data is more portable. In the future, it will be easier to properly replace catalog data from the MARC library to BIBFRAME.
  - For libraries implementing discovery plans, having consistent data makes it easier to manipulate, configure and present that data.
- Display FRBR relationships using relationship identifiers.
- Publisher and Date fields with MARC264 field to provide users with more detailed information.
- Abbreviations and Latin phrases will be easier for users to understand. in user displays.
- System vendors using RDA data from MARC 336; 337; 338 tags to replace GMD can work on developing icon-based visual displays.
- Allow libraries to clean up their local legacy data.
- -Opportunity to make improvements to record displays (icons) and advanced search functionality.
- Data stored in RDA or RDA/hybrid format:
  - Enable cataloging with a single standard instead of multiple standards;
  - have simplified workflows and cataloging processes for a single standard within the catalog;
  - provide easier training for catalogers and library educators;
  - allow ongoing cataloging processes to incorporate RDA after RDA enrichment, either internally or through companies. Parallel scripts, tools, or macros are used to describe and support these processes.

On the other hand, planning for the enrichment of RDA in the library needs to consider the challenges it faces, such as: time, human resources, and cost. In this regard, Panchyshyn and Park (2014) believe that the most important ones are time and human resources.

In short, the studies found that the aspects related to preparing library management systems for RDA are not very detailed and, as Maurer and Panchyshyn (2014) describe, the topic is not widely covered in the literature.

However, it can be seen that in order to implement RDA, library management systems need to be adapted to be compatible with the new standard. At a minimum, system preparation should include coding and inserting new MARC21 fields (336, 337, 338) to accommodate the new RDA elements (media type, content type, and support type); reviewing, updating, and migrating existing metadata from the previous code (AACR2) to the RDA format; and adjusting the display of RDA elements in the online catalog. It is also important to explore the possibility of enriching records in RDA. However, it is important to involve the library community and software vendors in the development of the RDA implementation.

#### 4.6 Technology Support and Tools

From the conception of RDA to its launch in the form of the RDA Toolkit, the creators of the standard have chosen to use technological tools as support to capture and share RDA knowledge with the library community. Similarly, when analyzing RDA implementation texts, it is clear that technological tools are being used for the same reasons: to record and share decisions and documentation related to RDA with staff and the library community.

Cross et al. (2014, p. 751) describe that "[...] the process of acquiring and sharing RDA knowledge has been greatly facilitated by the ability to quickly access reliable and up-to-date documents". The authors explain that "[...] *webinars*, *wikis*<sup>3</sup>, *RDA-L*<sup>4</sup> and other electronic forms of communication have also been very useful tools".

Behrens, Frodl, and Polak-Bennemann (2014, p. 697) report that all the collaborative work of the implementation took place in the library's wiki space. The authors believe that in this way the stages of the work are guaranteed and transparent to all participants at all times, ensuring that '[...] discussions and decisions remain transparent and usable if further work proves necessary'.

Similarly, Hanford (2014, p. 157) describes that "[...] a wiki is maintained for the department where local policies and relevant materials or hyperlinks of interest are hosted". To keep up with the national conversation, they have compiled materials on FRBR, FRAD, and RDA from various workshops, websites, and recommendations from the RDA mailing list. They also use the *Online Constant Data*<sup>5</sup> resource to "[...] create standard data sets that can be easily applied to a bibliographic record".

Maurer and Panchyshyn (2014) describe the creation of an RDA information webpage, with the aim of documenting the transition. The authors reported that for this type of information, the web page is significant for the success of the transition, even if the goal is to revisit the "why" of past decisions. "KSUL's RDA page is open to the public and has evolved into an informal

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<sup>3</sup> Web wiki "[...] is a content management system and also a markup language used on websites containing hypertext and hyperlinks that work with wiki software, in which several users collaboratively modify/edit at the same time their content and/or the structure of the wiki directly using a web browser, with the help of an enriched text editor". Available at: Wiki - Wikipedia, the free encyclopedia (wikipedia.org). Accessed on: September 24, 2023.

<sup>4</sup> RDA-L "is an online community for users of the RDA Toolkit and others to discuss RDA and other cataloging and metadata issues, as well as share information about events, job openings, etc. The community is free and open to all, but requires the creation of an account on ALA Connect, the platform that hosts the RDA-L. RDA Toolkit." Available at: Subscribe to RDA-L | RDA Toolkit (rdatoolkit.org). Accessed on: September 24, 2023.

<sup>5</sup> Online Constant Data is a resource that makes it possible to create a set of standard data that can be easily applied to a bibliographic record (Hanford, 2014, p. 162, our translation).



collection of useful web materials, KSUL documents, training materials, meeting notes, and policy statements" (Maurer; Panchyshyn, 2014, p. 269).

Choi, Yusof and Ibrahim (2014, pp. 617-618) organized the reference materials on RDA available on the web. "To facilitate access to these materials, the project team organized them into different categories and made them available on the team's TeamRoom."

According to Morris and Wiggins (2016), the library developed an online learning platform to provide large-scale, real-time training to external catalogers, which can be considered an innovation. The platform was subsequently used for other training sessions.

It is clear from the studies that technological tools can be applied and/or used throughout the RDA implementation process as support, especially for staff training, for creating and sharing documentation and policies, as an alternative for recording, organizing, documenting, making available and sharing information and knowledge about RDA, such as wiki, websites, RDA-L.

## 6 CONCLUSION

The decision to adopt RDA in libraries involves conflicting but complementary factors such as: innovation, opportunities, and challenges.

In terms of innovation, by adopting RDA, the library is keeping up with current practices adopted by other libraries. In addition to staying current, the library is beginning to share data in its cataloging process and preparing the library's data for a future of linked data and emerging applications that will replace MARC21, such as BIBIFRAIME. This evolution not only keeps pace with current trends, but proactively positions the library for the technological demands that lie ahead.

It can be seen that the implementation of RDA can be considered a training opportunity in cataloging for the professionals involved, since learning involves studying content relevant to the librarian's training and work, such as AACR2r, RDA and IFLA-LRM, and reviewing the entire cataloging process, both external and internal to the library.

Implementing RDA also provides the library with an opportunity to improve services, update documentation such as policies and manuals, and strengthen and improve authority control and the library management system.

However, the challenges associated with this process must be considered. Human and financial resources emerge as a concern, given the costs associated with implementation, which affect both the library and the host institution.

The RDA Toolkit, although considered an essential tool in presenting the RDA standard in web format and its updates, presents additional challenges such as cost and the need for translation for non-English-speaking countries.

Staff training is also a challenge. Although essential for successful implementation, it requires effective planning that considers various aspects such as different modalities and hybrid formats, relevant content, and practical measures to encourage and facilitate information sharing and knowledge creation.

Challenges also permeate the creation of cataloging policies that document institutional choices. Choices and definitions are processes that require the knowledge and experience of those involved in RDA and cataloging. For example, it can be challenging to review the entire internal cataloging process, considering the rules of RDA, AACR2, to make the appropriate institutional decisions that will affect the future of the library catalog.

The preparation of the library management system emerges as the most significant challenge, since it depends not only on the institution's will, but also on the willingness and ability of software vendors to offer solutions and adapt the system's applications to meet the requirements of RDA for the transition process.

Finally, technological support also presents significant challenges and opportunities. The first challenge stems from a lack of familiarity with how certain technological applications work and people's reluctance to incorporate new tools into their work routines. The cost of acquiring these technologies can be seen as another relevant challenge. However, by using these

technological tools in their daily work, employees are presented with the opportunity to learn and/or improve their technological skills.

In summary, while RDA offers many benefits, overcoming these challenges will require coordinated efforts and sound strategies to ensure a smooth and successful transition.

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