

## Records in Contexts (RiC)

Analysis of its application in archives, in light of the Linked Open Data (LOD) technologies

Records in Contexts (RiC): análise de sua aplicação em arquivos, a la luz de las tecnologías Linked Open Data (LOD) / Records in Contexts (RiC): análise da sua aplicação em arquivos, à luz das tecnologias Linked Open Data (LOD)

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### ABSTRACT

This article analyzes the new international standard for archival description Records in Contexts (RiC), proposed by the Expert Group on Archival Description of the International Council on Archives (Egad/ICA), through its experimental application in the “Slavery” document series and in view of the Linked Open Data technologies (LOD). It concludes that the RiC will have a major impact on archival principles and practices and access to archives.

**Keywords:** Records in Contexts; ontology; Linked Open Data; slavery.

### RESUMEN

Este artículo analiza el nuevo estándar internacional de descripción archivística Records in Contexts (RiC), propuesto por el Grupo de Expertos en Descripción Archivística del International Council on Archives (Egad/ICA), por medio de su aplicación experimental en la serie de documentos “Esclavitud” y a la luz de las tecnologías Linked Open Data (LOD). Concluye que el RiC tendrá un gran impacto en los principios y prácticas archivísticos y en el acceso a los archivos.

**Palabras clave:** Records in Contexts; ontología; datos abiertos conectados; esclavitud.

### RESUMO

O presente artigo analisa o novo padrão internacional de descrição arquivística Records in Contexts (RiC), proposto pelo Expert Group on Archival Description do International Council on Archives (Egad/ICA), por meio da sua aplicação experimental na série de documentos “Escravidão” e à luz das tecnologias Linked Open Data (LOD). Conclui que o RiC terá grande impacto nos princípios e práticas arquivísticas e no acesso aos arquivos.

**Palavras-chave:** Records in Contexts; ontologia; dados abertos conectados; escravidão.

## Initial issues

RiC-CM aspires to reflect both facets of the principle of provenance, as these have traditionally been understood and practiced, and at the same time recognize a more expansive and dynamic understanding of provenance. It is this more expansive understanding that is embodied in the word “contexts”... RiC-CM is intended to enable a fuller, if forever incomplete, description of the contexts in which records emerge and exist, so as to enable multiple perspectives and multiple avenues of access. (ICA, 2016, p. 9)

In 2016, when the Experts Group on Archival Description (Egad),<sup>1</sup> linked to the International Council on Archives (ICA), presented to the archival community the new conceptual model for describing Records in Contexts (RiC-CM), aimed at creating a future ontology (RiC-O) not only did it launch an important challenge to the processing of and access to archival records in the digital era, it also announced a potential crisis in archival ontology, as it unveiled a proposal for significant change in the way standards of archival description had been addressed, since 1994, with the use of the General International Standard Archival Description (ISAD(G)) (ICA, 2016).

When Egad proposed a multi-dimensional approach for the new standard that would complement the traditional multi-level approach of previous standards and expanded the notion of context to “contexts” in archives in the new international standard “Records in Contexts”, the Group who had been developing this conceptual model since 2012, did more than just challenge the international archival community to adapt to these changes, they also presented new issues that were seen to have a potential impact on the Principles of Provenance, on the practice of archival description in archives and on users access to their documents.

The new standard, a documentary language, would be “semantically more expressive” (Marcondes, 2012) for archives users on the web and more accessible to other still technologically unexplored contexts in archival collections. With this suggestion, as well as the incorporation and redefinition of its former description standards (ISAD(G), ISAAR, ISDF and ISDIAH), the Egad document (made available for public consultation in October 2016) announced not only theoretical and practical changes, but also pointed to significant changes as standards would

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1 <https://www.ica.org/en/about-egad>.

be based on technologies of the Semantic Web.<sup>2</sup> Moreover, this would soften the Principles of Provenance, Respect des Fonds and Original Order, all of which are held so dear and are fundamental in Archival Science.

In the light of this possible ontological crisis in Archival Science,<sup>3</sup> with so much technological innovation and such significant conceptual structural changes, a number of questions immediately arose: 1) Which significant changes are reflected in the conceptual model in the domain of archives, that go beyond the standards that already exist in RiC-CM-o.2? 2) How can the ontology Records in Contexts (RiC-O-v0.1) increase and represent the many contexts that are emerging in the current reality of archival documents? 3) On the basis of which premises did Egad broaden the concept of context and include a multi-dimensional approach in the conceptual model of Records in Contexts (RiC), aimed at reflecting the new reality of archives in the digital era? 4) What is the potential, predictable impact of the new RiC standard on the future of archives, archivists, and users' access to archives on the web?

These are complex issues for the archival community as they require interdisciplinary studies. This article aims to propose reflections on the theme and present elements that help to answer the above questions. The results obtained through bibliographical, documentary, experimental research, and interviews with members of Egad carried out during my postdoctoral research (Miranda, 2020), were organized and presented in the following sections.

## Multilevel and multidimensional

When members of Egad were asked, in my postdoctoral research (Miranda, 2020), about the theoretical methodological framework that influenced them in creating the conceptual model RiC-CM, their statements showed that in their reflections on the new reality of archives in the digital era, they were guided by certain scientific movements in the fields of both archive sciences and computing science, across a number of countries and in recent years. The same was observed in the preliminary version of the conceptual model, Records

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<sup>2</sup> The Semantic Web technologies, Linked Open Data (LOD) and the notion of Ontology, originally written by Berners-Lee, Hendler and Lassila (2001), in the article "The Semantic Web", proposed that information with semantic content could be processed by machines and linked by computers, through the markup language RDF (Resource Description Framework).

<sup>3</sup> The possible crisis mentioned here should not be seen as a means of promoting technophilia versus a possible technophobia. It merely announces a possibility to be discussed and answered in this article.

in Contexts, presented for public consultation in September 2016.<sup>4</sup> Egad was formed in 2012 with this aim, and it held online and face to face meetings up to 2016. In this period, it came up with the new standard of description, based on a conceptual model, with the premise of broadening the concept of context in archives and the inclusion of a multidimensional approach.

In the field of Archival Science, the notion of multiple contexts in which documents are created and gathered, is long-standing and is perceived in practice. However, according to Egad members, with the advent of digital documents and the worldwide network of computers, the analogical, hierarchical representation, that underpinned earlier description standards, ISAD(G), ISAAR(CPF), ISDF and ISDIAH, was no longer state of the art for archives in the digital era. This anachronism led to a crisis in this representation and the need to look again at the keystone of the Principle of Provenance, and its corresponding principles Respect des Fonds and Original Order, which are so dear to archivists and scholars of Archival Science. When they adopted the notion of Contexts, and not merely context,<sup>5</sup> for the new standard of description and a multidimensional (or multicontextual), rather than multilevel approach, Egad members were basing themselves on the premise that it is possible to represent the new reality of archival documents, not by describing them in water-tight, isolated units, primarily focused on the producer of the document and represented analogically in files and on shelves, as originally conceived by ISAD(G) and in subsequent standards, but in relationships between these units of archives and their institutional and social agents, as well as between the activities that created them. This new multidimensional representation is no longer hierarchical, but instead is presented in graphs, as a network of relationships. This substantially changed the initial multilevel focus, as archival documents had been described, and this became evident in new entities and their relationship with the conceptual model RiC-CM and later in RiC-O.

In the field of Computing Sciences, the representation of these premises in the conceptual model RiC-CM and in the consequent ontology RiC-O, were set up to allow data from this new standard to be available in RDF format, and able to be used on Linked Open Data. This is also clearly reflected in the Egad members' decision to base the new standard on Semantic Web technologies and in this new universe (ecosystem), where information architecture is represented

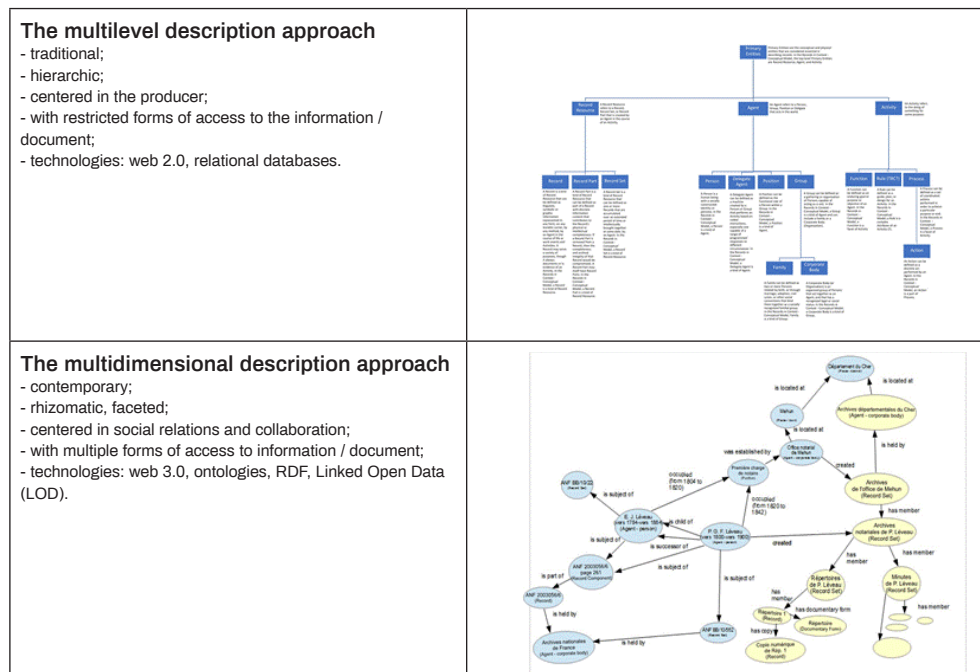
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<sup>4</sup> Like the concepts of Multiprovenance and Macroappraisal, which arose in Canada; and, of Records Continuum, which arose in Australia.

<sup>5</sup> Understood implicitly in norms prior to RiC-CM.

as a network of graphs, unlike the formats of previous standards of description, in which information was represented on the web hierarchically, mostly in XML format (Board 1), for the second generation of the web.<sup>6</sup>

### Board 1 – Multilevel and Multidimensional Architectures



Source: created by the author.

Therefore, in addition to the theoretical methodological basis of Archival Science and Computing Sciences that influenced Egad members in the conception of this new notion of Contexts and the new Multidimensional approach in the conceptual model RiC-CM and in the RiC-O ontology, with this new standard a novel scenario can be seen to open up for archives, in which a review and softening of archival principles and the use of Semantic Web technologies promise a different protagonism for archives and archivists in the digital era.

<sup>6</sup> Using formats in EAD and EAC.

## The conceptual model Records in Contexts (RiC-CM)

Given that, according to Peter Chen,<sup>7</sup> a conceptual model seeks to represent the reality of a particular area of knowledge, we can see the significant changes that new information technology and communication have brought about in both archival documents and their management, in the Conceptual Model Records in Contexts (RiC-CM). In other words, for both the management of current and intermediary archival documents and for the management of permanent archives.

RiC-CM is the result of significant changes in the field of archives, proposed by Egad, following public consultation of the international archivist community. It is a model that is also designed to underpin the creation of RiC-O ontology, with the aim of substituting the existing standards of description ISAD(G), ISAAR(CPF), ISDF and ISDIAH.

Considering that Conceptual Models are based on Entities, Attributes and Relationships, Egad attributed a hierarchy of 22 Entities to the last version of its model (RiC-CM-0.2), branching into 41 attributes and 78 Relationships. Here follows a brief description.

### RiC-CM Entities

The entities are the principal object of interest of professionals who manage documents, in terms of both origin and use (document management), or who manage the documents that are evaluated for preservation and long-term access (archives management). From the point of view of archivists, the entities identified are considered essential in providing the intellectual context that serves physical management, preservation, search, use and understanding of the documents throughout their history.

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<sup>7</sup> Peter Pin-Shan Chen, Chinese, born on 3 January 1947, is a Computing Scientist from Taiwan and a Science Professor at Louisiana State University. He is known as the creator of the Entity Relations model.

## Board 2 – RiC Entities Hierarchy

RiC Entities Hierarchy			
First Level	Second Level	Third Level	Fourth Level
RiC-E01 Thing	RiC-E02 Record Resource	RiC-E03 Record Set	
		RiC-E04 Record	
		RiC-E05 Record Part	
	RiC-E06 Instantiation		
	RiC-E07 Agent	RiC-E08 Person	
		RiC-E09 Group	RiC-E10 Family
			RiC-E11 Corporate Body
		RiC-E12 Position	
		RiC-E13 Mechanism	
	RiC-E14 Event	RiC-E15 Activity	
	RiC-E16 Rule	RiC-E17 Mandate	
	RiC-E18 Date	RiC-E19 Single Date	
		RiC-E20 Date Range	
		RiC-E21 Date Set	
	RiC-E22 Place		

Source: ICA, 2019.

## RiC-CM Attributes

Attributes are the characteristics of the Entities. The Attributes of an Entity, along with the Relations that the Entity has with other Entities, constitute an identity, in other words, what it is. Describing an Entity must involve observation and analysis of the evidence in order to identify its characteristics. Each Attribute is described based on a model and associated to others that characterize the Entities, as seen in the example of specific Attributes for the Entity Record, presented in Board 3:

## Board 3 – Specific attributes of the entity Record

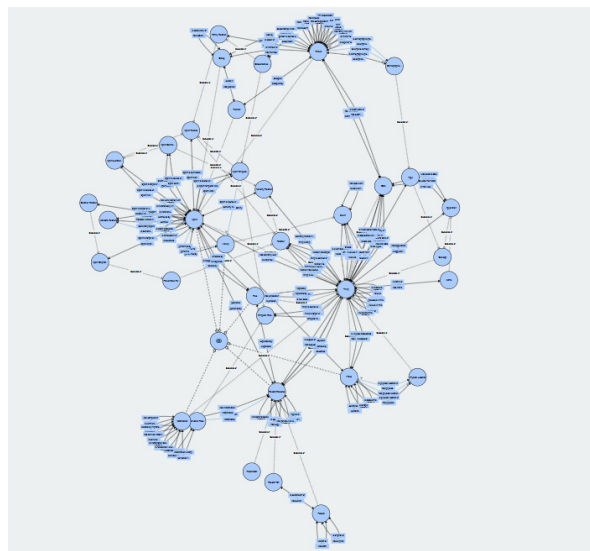
RiC-E04	Record
Attribute ID	Attribute Name
RiC-A16	Descriptive Note
RiC-A22	Identifier
RiC-A28	Name
RiC-A21	History
RiC-A35	Record Resource Extent
RiC-A38	Scope and content
RiC-A40	Structure
RiC-A03	Authenticity Note
RiC-A07	Classification
RiC-A08	Conditions of Access

RiC-A09	Conditions of Use
RiC-A10	Content Type
RiC-A17	Documentary Form Type
RiC-A24	Integrity
RiC-A25	Language
RiC-A26	Legal Status
RiC-A39	State

Source: ICA, 2019.

### RiC-CM Relations

In order to understand and describe archival documents it is essential to register the context in which the record resources were created, gathered, and managed over time and space. The role of RiC-CM Relations is to describe the connections between Entities, as they contribute to understanding of the context of the creation and maintenance of documents and as such, express significant characteristics of the history and management of the archive documents. RiC-CM relations are focused on connections and have a large impact on archival description. RiC-CM relations are conceptually different from standards based on XML, like EAD and EAC, that depend on structural hierarchy to define connections between Records for Series and Fonds. Instead, in RiC-CM relations are graph-based, which is similar to the Resource Description Framework (RDF), allowing for simpler more flexible connections, as seen in Figure 1.



**Figure 1 – Graph of the RiC conceptual model created by the software WebVowl in the ontology editor Protégé. Source: created by the author.**



## RiC-CM Implementation Research in the Slavery Series

The “Slavery Series” documentation is made up of hard copy documents of several different types, such as petitions, letters, telegrams, official correspondence etc., and refers to a single subject: compulsory urban labor in Rio de Janeiro. Documents are kept in bound copies in codex format, respecting the origin of the organization that gathered the information, the Municipal Chamber. In 1988, on the centenary of the Abolition of Slavery, these documents were organized in an indexed inventory, entitled Slavery Series, which facilitated and allowed later image capture of these documents. These are records concerning the abolition, free Africans, slave drivers, auction licenses, buying and selling of slaves, auctions, Ladino slaves,<sup>8</sup> slave registration forms, slaves who did remunerated work elsewhere, municipal regulations, slave trafficking, taxation, slave traders etc., collected by public authorities in the city of Rio de Janeiro, from colonial times until the declaration of the Lei Áurea.<sup>9</sup> (AGCRJ, 2007, p. 4)

The Slavery Series was chosen for this research into the implementation of the new description standard, Records in Contexts (RiC) with the purpose of analyzing it from the perspective of possible RiC Entities, Properties and Relationships, concerning the contents of the elements (or fields) of description of the Brazilian Standard of Archival Description (Nobrade), how rules are presented and how the series was originally described by archivists at the Arquivo Geral da Cidade do Rio de Janeiro (General Archive of the City of Rio de Janeiro) (AGCRJ), Antônio Sérgio Silva de Souza and Igor Boa Nova Castelo Branco.

This analysis was divided into the eight Nobrade areas of description and seeks to carry out an interpretative transfer of these fields and their contents to the possible entities, properties and relationships of the new RiC standard. It is, therefore, a projection of the way in which the archival description exercise is expected to happen, in the coming years, with the understanding that this will be the biggest challenge that the new RiC standard will present to archives and archivists, in other words, the transition from a multilevel approach to a multidimensional approach of description.

Nobrade is a national standard based on ISAD(G) that acts as a guideline for archival document description in Brazil. The standard has eight areas of

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<sup>8</sup> I.e. black enslaved people born in Brazil, as opposed to those born in Africa.

<sup>9</sup> The Lei Áurea was the law, signed on May 13th, 1888, that extinguished slavery in Brazil.

description, which are as follows: 1) the identification area, 2) the contextualization area, 3) the content and structure area, 4) the conditions for access and use area, 5) the related sources area, 6) the area of notes, 7) the area for description control and 8) the area of points of access and subject indexing. The norm includes a total of 28 elements of description and of these, the following seven are obligatory: 1.1 – Reference Code, 1.2 – Title, 1.3 – Date(s), 1.4 – Description level, 1.5 – Dimension and support, 2.1 – Authors' names and 4.1 – Conditions of Access (Brazil, 2006, p. 19).

Therefore, given that the description process, even with norms, objectives and rules, is a subjective act of dialogue between the archivist-describer and the archive documents in order to interpret, infer and understand the multiple contexts and to represent them in the best way for future users, we present here our research into the transfer from Nobrade to the new RiC standard,<sup>10</sup> in the knowledge that this will be a fundamentally important task in the coming years, in the description of documents, that, as we know, will forever be incomplete.

### Projection of fields from the Nobrade Identification Area to the possible RiC entities, properties and relationships

The Identification Area field is focused on describing the archival document itself and is considered essential as they include five of the seven obligatory fields of the total twenty-eight Nobrade fields. Seen from the perspective of the new RiC standard, these fields mainly represent the properties and relations of the Record Resource entities and their sub-entities Record Set, Record and Record Part. By analyzing the field contents of the AGCRJ Slavery Series, we projected the transition of the fields from Nobrade to the possible RiC entities, properties and relationships, considering the following specific aspects of each field:

The field content 1.1 – Reference Code, following the Nobrade rule, was formed using the country code, BR (Brazil), the state code RJ (Rio de Janeiro), the holder entity AGCRJ and the specific codes for the description units CM (Municipal Chamber of Rio de Janeiro) and ESC (Slavery Series). Therefore, from the perspective of RiC, in addition to correlation of the series BR.RJ.AGCRJ.CM.ESC with the entity Record Set and the property identifier (RiC-A22), a number of possible relations can be projected, for example in the

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<sup>10</sup> Because of limitations of space in this article, we have presented only the Identification Area of Nobrade for the Slavery Series and for one of its manuscripts.

Identification field alone, the following are possible *has subject* (RiC-R019), *contains* (RiC-R007), *is jurisdiction of* (RiC-R076), *is holder of* (RiC-R039), *has constituinte* (RiC-R003) and *has provenance* (RiC-R026).

The content of the fields 1.2 – Title (Slavery), 1.3 – Date(s) (1794-1880) and 1.4 – Description Level (Series N3) can be understood, respectively, as the contents of the properties Name (RiC-A28), Expressed Date (RiC-A19) and Record Set Type (RiC-A36) of RiC and, in principle, do not suggest relationships to be listed in the new description standard.

Field content 1.5 – Dimension and Support of the Slavery Series, it presents three genres of document (text, micrographic and electronic/digital), in its collection and three types (codex, 35mm microfilm and 20 DVDs) are linked to them. From the perspective of RiC, these genres refer to the entity Instantiation (RiC-E06), to its respective properties Carrier Type (RiC-A05) and Carrier Extent (RiC-A04) and the possible relationships: *is instantiation associated with instantiation* (RiC-R034) and *has derived instantiation* (RiC-R014).

With a view to the future transition of the description process from one standard to another, we have presented a projection from these fields in the Identification Area of the Slavery Series to the possible Entities, Properties and Relationships of the new RiC standard, in Board 4:

#### Board 4 – Projection of the Nobrade fields to RiC – Identification Area

Projection of the Slavery Series (described according to Nobrade fields) to the possible Entities, Properties and Relationships of the new RiC standard							
Identification area							
Field	Content	Entities in RiC	Properties in RiC	Possible Relationships in RiC			Type of Relationship
				Subject	Property	Object	
1.1 – Reference Code	BR.RJ. AGCRJ. CM.ESC	RiC-E03 Record Set	Identifier (RiC-A22)	BR.RJ. AGCRJ. CM.ESC	<i>has subject</i> (RiC-R019)	Slavery	Subject relations
	BR = Brazil	RiC-E22 Place (BR)		BR	<i>contains</i> (RiC-R007)	RJ	Spatial relations
	RJ = Rio de Janeiro	RiC-E22 Place (RJ)		RJ	<i>is jurisdiction of</i> (RiC-R076)	AGCRJ	Spatial relations
	AGCRJ = General Archive of the City of Rio de Janeiro	RiC-E07 Agent (AGCRJ)		AGCRJ	<i>is holder of</i> (RiC-R039)	CM	Management relations

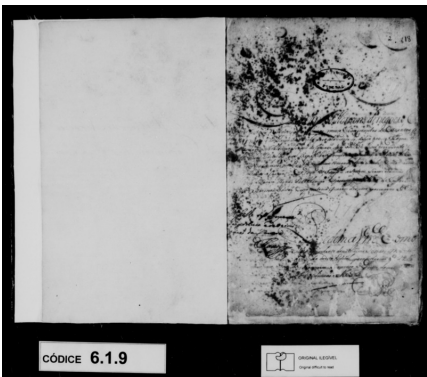
	CM = Municipal Chamber of Rio de Janeiro	RiC-02 Record Resource		Fond CM	<i>has constituante</i> (RiC-R003)	Série ESC	Record Resource to Record Resource relations
	ESC = Slavery Series	RiC-E03 Record Set		Series ESC	<i>has provenance</i> (RiC-R026)	Fond CM	Provenance relations
1.2 – Title	Slavery	RiC-E03 Record Set	Name (RiC-A28)				
1.3 – Date(s)	1794-1888	RiC-E20 Date Range	Expressed Date (RiC-A19)				
1.4 – Level of Description	Series (N3)	RiC-E03 Record Set	Record Set Type (RiC-A36)				
1.5 – Dimension and Support							
1.5.1 – Genre	Text	RiC-E06 Instantiation		Genre text	<i>is instantiation associated with instantiation</i> (RiC-R034)	Genre micrographic	Instantiation to Instantiation relations
Type	Codex		Carrier Type (RiC-A05)				
Quantification/ Measurement	101 codexes/ files or 4.5 linear meters		Carrier Extent (RiC-A04)				
1.5.2 – Genre	Micrographic	RiC-E06 Instantiation		Genre Micrographic	<i>has derived instantiation</i> (RiC-R014)	Genre Text	Instantiation to Instantiation relations
Type	Microfilms (35mm)		Carrier Type (RiC-A05)				
Quantification/ Measurement	30 Unit(s): items		Carrier Extent (RiC-A04)				
1.5.3 – Genre	Electronic/ Digital	RiC-E06 Instantiation		Genre Electronic/ Digital	<i>has derived instantiation</i> (RiC-R014)	Genre Text	Instantiation to Instantiation relations
Type	DVD		Carrier Type (RiC-A05)				
Quantification/ Measurement	20 Units(s): items		Carrier Extent (RiC-A04)				

Source: created by the author.

## Complementary Analysis of a Slavery Series Manuscript

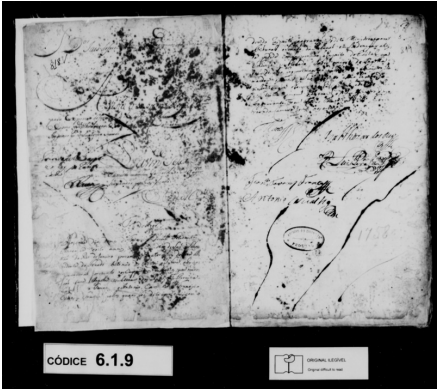
An analysis of the manuscript, BR.RJ.AGCRJ.CM.ESC.6.1.9.M.1,<sup>11</sup> (part of the item coded as BR.RJ.AGCRJ.CM.ESC.6.1.9) from the Slavery Series BR.RJ.AGCRJ.CM.ESC, is included here for additional information. It is an example that illustrates just one of the many manuscripts of the 101 codices of the Slavery Series. It also provides a projection of the possible RiC Entities, Properties and Relations, by means of some fields considered to be obligatory and essential by Nobrade, for this analysis:

### Board 5 – Paleographic Transcription Form for manuscript BR.RJ.AGCRJ.CM.ESC.6.1.9.M1

<p>Paleographic transcription form</p> <p>Manuscript BR.RJ.AGCRJ.CM.ESC.6.1.9.M1<sup>12</sup></p> <p>Origin: Slavery Series from the General Archive of the City of Rio de Janeiro (AGCRJ)</p> <p>Appeal to the Justice of the Peace by businessmen in the city of Rio de Janeiro against the relocation of the trading post for new slaves</p>	
Images and transcriptions	
Image: sheet 818r	
Transcription sheet 818r	<p>Sheet 818r</p> <p>Dizem os Homens de negócio, e [ilegível] de Navios, [ilegível] e mais carregantes de escravos que [ilegível] do Reino de Angolla para esta cidade que a sua notícia chegou a cujo Nobilissimo Senado da Câmara de que [ilegível] para presidente hum edital pelo qual lhe parece compellir [ilegível] [linha parcialmente ilegível] trazem Lado a Carioca. Nós os suplentes assistem ser [ilegível] que se fazem dignas de atenção e [ilegível] ao mesmo edital cuja matéria querem deduzir por mesmo [rubrica] [ilegível] pelle se [ilegível] peça da perdura e determinação da Câmara A ver Pedem a Vossa Mercê como [ilegível] presidente deste officimo Senado [ilegível] dar vida de dito edital [ilegível] os de por irem [ilegível] e effeito do mês athe a direção do Mês.</p>

<sup>11</sup> Named by the author as there is no identification code in the AGCRJ analytics inventory.

<sup>12</sup> Copies kindly provided by the Director of AGCRJ for private use at the present time. The transcriptions were kept on their original form, without revision or updates.

Image sheets 818v and 819r		
Transcription sheets 818v e 819r	<p>Page 818v</p> <p>Senhor Doutor Juiz de fora, Presidente do Senado da Câmara A vista que os [ilegível] pedem [ilegível] para em porem de fez [ilegível] e como vossa mercê lho denegar [ilegível]. Tomão [ilegível] Aggravo para o supremo senado. [linhas ilegíveis]</p> <p>Para Vossa Mercê seja servido mandar saber seu agravo havendo por lá ficado. [rubrica não identificada]</p> <p>Aos onze dias de fevereiro de mil setecentos e cincoenta e oito annos, nesta cidade de São Sebastião do Rio de Janeiro perante o Doutor Juiz de Fora e Presidente do Senado Antônio de Freitas Silva, aqui o parecerão presente os capitães de navios que nave-gão para Angola: Baltazar dos Reis, Luís Pereira de Farias e Antônio Carvalho e Francisco Tavares França pelos quaes foi dito que elles com o</p>	<p>Page 819r</p> <p>devido respeito aggavo do dito Ministro e para Tribunal e Senado da Relação em lhe denegar a vista o pedido em suspensão a respeito do Edital que se havia publicado sobre negro de Angolla servido seu requerimento. [ilegível] Ministro lhe mandou escrever a seu aggravo e no re [ilegível] vinha em que houve [ilegível] fiz ter [ilegível] em que assignou o dito Ministro esse Agravante e eu André Martins Britto, escrivão da Câmara que o escrevo.</p> <p>Mater Baltazar dos Reis Luiz Pereira de Farias Francisco Tavares França Antônio Carvalho</p>
Paleographer's Notes	The document is difficult to read because of its state of conservation	
Transcription Date	14/12/2020	
Person responsible for Transcription	Ariadne Pires Barbosa	

Source: created by the author.

## Board 6 – Projection of the fields of Manuscript BR.RJ.AGCRJ.CM.ESC.6.1.9.M1 from Nobrade to RiC

Projection of Manuscript BR.RJ.AGCRJ.CM.ESC.6.1.9.M1 (described by Nobrade fields) to possible Entities, Properties and Relationships of the new RiC standard							
Field	Content	Entities in RiC	Properties in RiC	Possible Relationships in RiC			Type of Relationship
				Subject	Property	Object	
1.1 – Reference Code	BR.RJ.AGCRJ.CM.ESC.6.1.9.M1	RiC-E03 Record Part	<i>identifier</i> (RiC-A22)	BR.RJ.AGCRJ.CM.ESC.6.1.9.M1	<i>has subject</i> (RiC-R019)	Slave merchants	Subject relations
	Codex 6.1.9.M1	RiC-E03 Record Part		Codex 6.1.9	<i>has provenance</i> (RiC-R026)	ESC Slavery Series	Provenance relations
1.2 – Title	Appeal to Juiz de Fora <sup>13</sup>	RiC-E03 Record Part	<i>name</i> (RiC-A28)				
1.3 – Date(s)	11/02/1758	RiC-E20 Date Range	<i>expressed date</i> (RiC-A19)				
1.4 – Level of Description	Document Item (N5)	RiC-E03 Record Part	<i>record set type</i> (RiC-A36)				
1.5 – Dimension and Support							
1.5.1 – Genre	Text	RiC-E06 Instantiation		Genre Text	<i>is instantiation associated with instantiation</i> (RiC-R034)	Genre Micro-graphic	Instantiation to Instantiation relations
Type	Manuscript		Carrier Type (RiC-A05)				
Quantification/Measurement	3 sheets of manuscript documents		Carrier Extent (RiC-A04)				
1.5.2 – Genre	Micrographic	RiC-E06 Instantiation		Genre Micrographic CM-ESC.001	<i>has derived instantiation</i> (RiC-R014)	Genre Text BR.RJ.AGCRJ.CM.ESC.6.1.9	Instantiation to Instantiation relations
Type	microfilms (35mm)		<i>carrier type</i> (RiC-A05)				
Quantification/Measurement	3 slides of microfilm		<i>carrier extent</i> (RiC-A04)				
1.5.3 – Genre	Electronic/Digital	RiC-E06 Instantiation		Genre Electronic/Digital	<i>has derived instantiation</i> (RiC-R014)	Genre Text	Instantiation to Instantiation relations

<sup>13</sup> A Juiz de Fora was a magistrate appointed by the King of Portugal to serve in the municipalities where the intervention of an impartial and unbiased judge – usually from outside of the town – was necessary.

Type	DVD		carrier type (RiC-A05)				
Quantification/ Measurement	3 archives .png		carrier extent (RiC-A04)				
Type	Transcription		carrier type (RiC-A05)				
Quantification/ Measurement	1 archive .docx		carrier extent (RiC-A04)				
2.1 - Name(s) of Authors(s)	Baltazar dos Reis, Luiz Pereira de Farias, Antônio Carvalho, Francisco Tavares França and Antônio de Freitas Silva	Person (RiC-E07)	name (RiC-A28)	Municipal Chamber of Rio de Janeiro	is owner of (RiC-R037)		Management relations
3.1 – Context and Content	Este manuscrito refere-se à uma petição escrita por Baltazar dos Reis, Luiz Pereira de Farias, Antônio Carvalho e Francisco Tavares França ao juiz de fora e presidente do Senado da Câmara doutor Antônio de Freitas Silva na cidade do Rio de Janeiro e foi redigido pelo escrivão André Martins Britto em 11/2/1758						
	This manuscript refers to a written appeal by Baltazar dos Reis, Luiz Pereira de Farias, Antônio Carvalho and Francisco Tavares França to the Juiz de Fora and Chairman of the Senate of the Chamber doctor Antônio de Freitas Silva in the city of Rio de Janeiro and was typed up by the scribe André Martins Britto on 11/02/1758						
4.1 – Conditions of access	Not described						



5.4 – Notes on publication:	Not described						
6.2 – General Notes	Not described						
8.1 – Points of access and indexing subjects:							
	Juiz de Fora, President of the Senate of the Chamber, Shipping businessmen (slave traders) Kingdom of Angola, (Kingdom of Kongo), Ships Captains, black people from Angola						

Fonte: criado pelo autor.

## Ontology Records in Contexts (RiC-O), Linked Open Data (LOD) Linked Open Archives (LOA)

The entities, properties and the many relationships projected and inferred in the previous implementation research, using the RiC-CM conceptual model on the Slavery Series, are the first step in understanding how the result of a representation of information, which is a conceptual model, leads to or may be transformed into a resource for organizing information, which in this case is the ontology, Records in Contexts, version (RiC-o.v-1) and its implementation in the same series of documents.

The notion of ontology,<sup>14</sup> and its OWL<sup>15</sup> language, was originally proposed by Berners-Lee, Hendler, and Lassila, in the article “The Semantic Web” (Berners-Lee, Hendler, Lassila, 2001), underpinned by the Semantic Web<sup>16</sup> and

<sup>14</sup> Ontologies are used in artificial intelligence, the Semantic Web, software engineering, and information architecture, as a way of representing knowledge about the world or some part of it.

<sup>15</sup> OWL (Web Ontology Language) is a language for defining and instantiating ontologies on the Web. An OWL language can include descriptions of classes and their respective properties and relationships.

<sup>16</sup> The Semantic Web connects word meanings and, in this respect, aims to be able to assign a meaning (sense) to the content published on the Internet in a way that is perceivable by both humans and computers.

Linked Open Data (LOD)<sup>17</sup> technologies, so that information with semantic content could be processed by machines and linked up by computers, using the query language RDF,<sup>18</sup> that operates through triples, made up of the elements Subject, Property, Object (as shown in our previous implementation). As they are semantic and unambiguously identified on the web through a URI (Uniform Resource Identifier),<sup>19</sup> they generate graphs that interconnect these elements.

These technologies are presented in a way that promises to represent and organize information from a given area of knowledge using this structure of graphs which is compatible not only with the html link and node structure, the internet itself (i.e. computer networks), but also allows interconnection between all these elements when they are represented and organized in the same web vocabulary (also known as ontology), as is the case of the RiC-O.vo.1 ontology.<sup>20</sup>

This technological promise for archives has started to become a reality, but given the complexity of implementing these technologies, it is assumed that it will be a long time before archival documents will be able to participate in the Linked Open Data environment. The documents will have to undergo an entire process for this to happen, starting with rethinking the process of description, resignifying former standards of document description and opening up to the multi-dimensional approach brought by the conceptual model and RiC ontology.

We propose this implementation research should start by referring to the “10 stages of lifecycle in a data ecosystem on the web” (Berners-Lee, 2006) using a method that aimed to make the set of documents pertaining to the Slavery Series of the General Archive of the City of Rio de Janeiro (AGCRJ) available on the web, through RiC ontology, using Semantic Web technology (Isotani; Bittencourt, 2015, p. 147), in order to link up in the future with other document sets from Angola and Portugal on the Atlantic Slave Trade in the Linked Open Data (LOD) environment.

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<sup>17</sup> Linked Open Data (LOD) uses Semantic Web technologies to publish structured data on the Web and link data from one source to others.

<sup>18</sup> RDF is a standard syntax for representing a directed graph in XML. Elements of the model: Resource, Property, Value, Statement.

<sup>19</sup> Uniform Resource Identifier (URI) is a technical term which has been translated into Portuguese as “identificador uniforme de recurso”. This is a compact chain of characters used to identify or denominate an internet resource.

<sup>20</sup> Accessible through IRI: <https://www.ica.org/standards/RiC/ontology>.

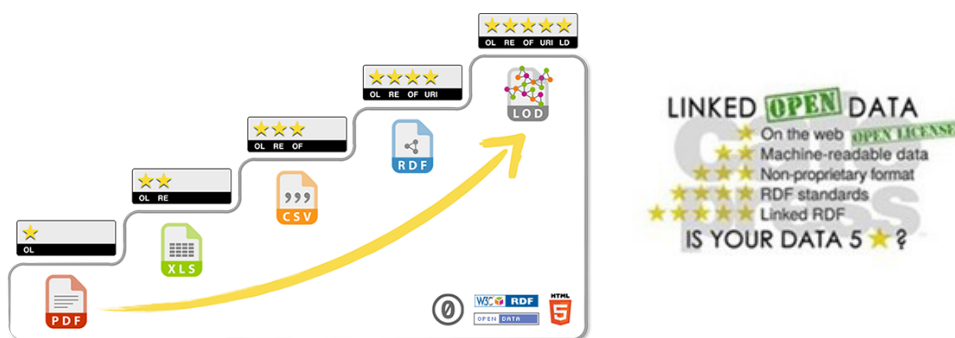


Figure 2 – 5 stars system for Open Data. Source: <https://5stardata.info/en/>.

For this purpose, experimentally, we created an LOA platform – Linked Open Archives ([www.linkedopenarchives.com](http://www.linkedopenarchives.com)), a technological architecture that hosts the digital repository Omeka S.<sup>21</sup> We entered the RiC-O 0.1 ontology into this and the site Atlantic Slave Trade, in order to test the Slavery Series content that was transcribed. This proposed architecture aims to make Linked Open Data (LOD) available and is made up of three main components: Omeka S, Ontop and Virtuoso Open Source (VOS).

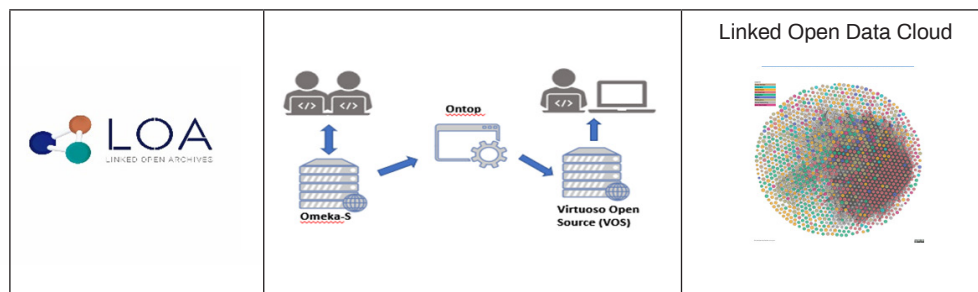


Figure 3 – Architecture from the Linked Open Archives (LOA) platform to the Linked Open Data universe. Source: created by the author.

Omeka S is a digital collection software management program which allows the producer and keeper of the data to enter, update, remove and publish data from the ecosystem. However, this component stores information in

<sup>21</sup> Although not compatible with the Open Archive Information System (OAIS) technology, an important resource for the digital preservation of archival documents (planned for the next version of LOA), the option for the Omeka S digital repository (<https://omeka.org/>) is because it offers resources for inserting Ontologies/Vocabularies and publishing data in the Linked Open Data (LOD) environment.

a relational database, providing an Application Programming Interface (API) that makes data available only in the JSON-LD<sup>22</sup> format, which is not yet widely supported and has a limited capacity for integration with other data sources. According to Berners-Lee (2006), one of the principles that must be followed for data to be published as Linked Data is that it must be accessible in an RDF format and, potentially, through an SPARQL<sup>23</sup> endpoint. To fulfil this the Ontop<sup>24</sup> component will be used to take on the task of exporting data from the Omeka S database to an RDF/Turtle archive.<sup>25</sup> This archive, then will be used to enter Virtuoso Open Source,<sup>26</sup> which will store this information on its graph database and will publish it on its own SPARQL endpoint. It is worth mentioning that this architecture will be transparent for users, as the entire communication process between components will occur automatically. The archivist will use Omeka S as the interface to enter and maintain data and users will consult information stored via user-friendly interfaces, through the Atlantic Slave Trade<sup>27</sup> site, as seen in Figure 4:

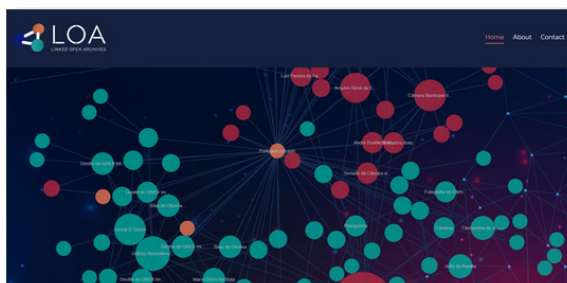


Figure 4 – Image of the Linked Open Archives (LOA) hub. Source: <http://linkedopenarchives.com>.

<sup>22</sup> <https://json-ld.org/>.

<sup>23</sup> SPARQL is a language for querying RDF graphs, standardized by the Data Access Working Group of the World Wide Web Consortium (W3C).

<sup>24</sup> <https://ontop-vkg.org/>.

<sup>25</sup> <https://www.w3.org/TR/turtle/>.

<sup>26</sup> <http://vos.openlinksw.com/owiki/wiki/VOS>.

<sup>27</sup> Site under development by the Linked Open Archives (LOA) project team.

## The new concept of "Context" and the impact of RiC on archival principles and practices

The new notion of "Context," embedded in the very name of the new Records in Contexts standard, the use of Semantic Web and Linked Open Data (LOD) technologies for archival access, and the proposal of a new multidimensional approach to archival description, seem to be, in themselves, high-ignition factors to set archival principles and practices aflame, before, during and after the ICA/Egad official launch.

Given that its full application is still a proposition for the future of archives, archivists, and the Archival Science, we chose to ask the Egad members themselves, who have been drafting this RiC proposal since 2012, how they conceived of this new notion of Contexts and what impact they presume for principles, practices, and the archival community in the years to come (Miranda, 2020). To that end, we formulated two questions, and the answers we received from some of the members speak to that possible ontological crisis (Board 7):

### Board 7 – Egad members' responses to questions about a possible ontological crisis in archival science

	Question 1	Question 2
<b>Egad members</b>	<b>In terms of naming the standard: could you reflect on the period from 2012-2016 specifically on how you defined the new concept of "context" in Records in Contexts?</b>	<b>In terms of impact: would you imagine how RiC will impact the future of archival studies and practice, especially as pertains to principle of provenance?</b>
<b>Vitor Manoel M. da Fonseca (Brazil)</b>	The idea of context, when incorporated in standards, was very much tied to the producer, the relationship between the documents themselves and the function/activity for which they were created and, at most, the institution that custodied them. But the context is much more than that – it is possible to think on socioeconomic context and political context and even a personal or institutional historical context. I believe that the use of "contexts", in the plural, wishes to recognize all these possibilities and leave open all the contextual relationships that are thought as opportune.	The idea of provenance is profoundly tied, since its formulation, to the notion of context. In this sense, there is no opposition but rather reinforcement. But it is clear that the new idea of context is immensely wider than initially presented in the provenance principle. Inevitably this principle will have to be rediscussed and resignified, but it will not cease to be fundamental to the Archivology.

<b>Florence Clauvaud (France)</b>	<p>In France and particularly in the Archives Nationales de France, from the release of ISAD(G) and ISAAR(CPF), that came along with the ad hoc XML exchange formats, archival description has focused on only some facets or layers of contexts...</p> <p>For a few years, for many reasons, many archival institutions in France have begun to pay much more attention to other facets of the contexts, especially the functional provenance. However, here, a lot of work must be done in order to describe the activities of agents and relate them to agents and records. Another topic that has become important, is to provide the end users with more access points, including the agents concerned by a record or related to records by any kind of relation, and the same for the places. Again, doing this implicates to build authority data on agents and places, which we are just beginning to do. In such a situation, RiC is timely; it makes it possible to base the reflection and the work on a complete and rigorous conceptual basis, by defining all the entities and the useful relationships.</p>	<p>If RiC is widely adopted and implemented (which will take time), the impacts on the work of describing the archives (whether in terms of its content and methods), and on the methods of access archives will be deep in the medium term. This will benefit both archives and users. Regarding provenance, RiC follows on from the ISAD(G), ISAAR(CPF) and ISDF standards; its greatest interest is to define precisely in a single standard, the entities at work (records, agents, activities) and the relations which exist between them. RiC, with the Event entity and the relations associated with this entity, also makes it possible to represent the very history of a record resource other than by a text in prose. Provenance, in a way, will thus become one facet, one element (one of the core elements), among others that form the history of records and their current contexts. All this forms a network, and if we use RiC, can be represented as such.</p>
<b>Tobias Wildi (Switzerland)</b>	<p>I wasn't yet a member of Egad at that time. But the goal to integrate every aspect of archival description into one coherent standard seemed very appealing to me. Modelling and describing (possibly several!) contexts within one framework would make archival description (with the help of semantic technologies) connectable to already existing resources e.g., in the library world, on Wikidata, GND and so on. The fact that archival description will no longer take place in isolated silos but can be connected to the environment is for me one of the important aspects of "contextualizing" in RiC.</p>	<p>The fact that we distinguish between a conceptual model (CM) and an implementation in the form of an ontology will hopefully make RiC sustainable over a long period of time. The CM and its basic principles can rest stable over time, the implementation will change with the advent of new technologies and new data modelling practices.</p>
<b>Gavan McCarthy (Australia)</b>	<p>The idea of context has been central to my approach to archival practice and my research for many decades now. In very simple terms context refers to that set of knowledge that is needed to adequately and reasonably understand and interpret an information object. I.e., what needs to be known to make sense. The user may already hold some of that knowledge, but other knowledge will need to be supplied, to be on hand – that is related and linked to the object. I was involved with Daniel Pitti and others in the development of Encoded Archival Context (EAC) and the naming of the schema was an important part of those discussions. RiC, for me, in particular, was a natural progression from EAC. Egad had discussions (it always has many) about the naming of the new standard. My recollection is that "context" was always a lead contender as it implies the relationality of the standard. The question was then either "context" or "contexts". The decision to go with the plural acknowledged the multiple dimensions in which context could and or would need to be framed to meet both the needs of all the possible users (and their varying degrees of knowledge) and the archivists and recordkeepers (their varying degrees of knowledge especially over long time and multiple generations of archivists).</p>	<p>The impact of RiC must be profound. It has become increasingly clear that the relational approach, as contrasted with the catalogue approach of ICAD(G), represents a paradigm shift. To undertake the work, we have done in my teams we have developed a few analytical methodologies to help lead researchers and archivists into the world of connected or linked up knowledge. We have found that while our brains work in this way our cultural bias towards classification drives us away from this approach in practice. It is therefore something that must be learned and this is best done through doing. We have named these methodologies "Context Entity Analysis"; "Evidence Resource Analysis"; and "Narrative Reconstruction". I will not go into the details of these here. For me the principle of provenance still holds in this new paradigm but its meanings and the way it can be articulated will evolve to encompass the multiple dimensions of "records" being documented as part of an "open, complex, scale-free network" (this is a technical term).</p>

<b>Javier Requejo Zalama (Spain)</b>	Well, in my case, I am not a founding group member because I joined Egad in October 2014 and my first working group meeting was precisely after the discussion about the naming of RiC. Anyway, I think the naming of RiC seems to me quite adequate considering that archival description must pay attention not only to records but to everything that surrounds them (their contexts).	I don't believe that RiC implies a change of paradigm about the principle of provenance, understood as a basic axiom for Records Management, basically because RiC is not a standard for records management, but only for description (only a part of records management). What I hope is that RiC offers a new vision on how to disseminate archival information and make it available to users.
<b>Bogdan Popovici (Romania)</b>	In one of the first tasks of the project, we had to document the classical archival principles, principle of provenance and original order. In the debates on this paper, we agreed there are many provenances and many orders. And, moreover, there are orders that may not be original, but be relevant, and that the significant environment of a record may be more than provenance(s). And thus, the aim of present records in contexts emerged. The term was coined by Daniel <sup>28</sup> .	It is a sort of democratisation about records. Until now, records & archives were the realm of archivists, claiming, due to their professional expertise (real or presumed) to have a sort of monopoly over management and "proper" use of records. Their perspective mattered; their approach was the pertinent one. With RiC, provenance will be put in its proper place (IMHO) <sup>29</sup> ; that it is a relevant and important context of records, but definitely not the only one and not the one for everybody. It will still be the core principle for archivists and those who wants to better understand records, but for the vast majority of users, it meant, and it will mean nothing. And, since the latter are a majority, it is a democratisation to put also their perspective as valid, not only archivists'. Once, to make a chalet you needed a professional, today, the "recipe" may be found on YouTube, as do it yourself. Is it good, is it bad? Who knows...
<b>Adrian Cunningham (Australia)</b>	The four years from 2012 to 2016 were an exciting time for Egad, as we reached consensus on a radically new approach to conceptualizing archival description. It was far more than a consolidation of the previous ICA standards, but rather was something of a paradigm shift. The fact that people from so many countries were involved in that shift, and were prepared to think outside their comfort zone, was quite amazing... Describing records has always been about linking records to their context of creation and use – though in the old ICA standards this aspect of description was very much downplayed. We decided to make it center stage, rather than a side issue. Context is of course infinite. But description cannot be infinite. But through linked data there is the possibility of linking our descriptions to a potentially infinite world of contextual information. Context is also contingent. The context that is relevant from one perspective will not be as relevant from another perspective. Rather than dictate or privilege which perspective matters, we want description to be hospitable to multiple perspectives regarding context – hence the use of the plural form of contexts.	For many archivists RiC will be weird and almost incomprehensible. So, it will be necessary to explain it patiently and to provide some practical implementation guidance. It is very complex and conceptual. So it will take time for it to really change archival practice. Other archivists will welcome RiC, as there is a whole new generation of archivists who are attuned to linked data and ontologies and are impatient for the new paradigm. The real changes will come when software applications are developed that accommodate RiC and move into broad usage across the industry. That will take some years. RiC will fuel a much needed discussion about the meaning of provenance, and how to document it, in the 21st century.

<sup>28</sup> Daniel V. Pitti is the director of the Social Networks and Archival Context (SNAC), United States of America, and president of the Expert Group on Archival Description (Egad/ICA).

<sup>29</sup> IMHO: in my humble opinion.

<b>Martin Stürzlinger (Austria)</b>	<p>I guess that bigger institutions are more likely to adopt RiC than smaller ones. For all others it will depend a lot on the implementation, meaning how software will support the way of data input and viewing the data. Based on a by now outdated draft of RiC you can see this in the attached example.</p> <p>It is great that we can input the data on exactly the level that it needs to be. We can differentiate between entities, attributes and even relations. But most archivists and almost all users do not care about that. They need descriptions that they can read and understand...</p>	<p>Regarding your question about provenance, I can see that the importance of this principle will diminish. Already it becomes less important as our Google-like searches get right to the information. Who cares about context? A few archivists would like to label a database, website, a record keeping system, an unorganised heap of information with provenance. With RiC we will be able to establish that kind of context to the information that is available for description. If a clear provenance is possible to describe then it will be part of the RiC description. If provenance is unclear or unknown then the RiC description will establish other contexts – in plural.</p> <p>The description in RiC will be complete and valid if there is enough context – with or without provenance. So RiC will certainly not be responsible for the death of the principle of provenance but it will (unwillingly) diminish the importance even more...</p> <p>Regarding impact I have a clearer vision. I think the road for success is not clearly laid out for RiC. It will need a lot of convincing and good practise for RiC to succeed. We are actually atomising the description of archives, distributing segments of the whole description into different entities and attributes and relations. This we do in a much more detailed way than in ISAD. This has a lot of advantages if we can link archival description within institutions and more so between institutions.</p>
<b>Daniel Pitti (USA) Chair of Egad/ICA</b>	<p>At our first meeting in Brussels in 2013, I suggested "Records in Context" as the name for our work. We recognized that the Principle of Provenance, while broadly accepted, was interpreted differently in different national/ cultural contexts, and that the traditional understanding focused the context of origination and use of records. The word "context" embodied, we thought, a more expansive, inclusive understanding of provenance. It at once respected the traditional understanding of the Respect de fonds, but also understood it in a way that recognized that the traditional understanding, while sound, did not recognize that provenance is much more complex than the traditional understanding, that focused on the creator of a fonds to the exclusion, or at least obscuring, of the complex interrelations of entities associated with records. In late 2015 we made context plural because we wanted to emphasize that a record comes into existence, and after it does so, it has a history that continues after its origins, and in the course of that history may and likely will exist in multiple contexts. In other words, we wanted to emphasize fully understanding records required more than merely identifying the context of origin.</p>	<p>It is rather difficult to make predictions. Perhaps it would be better to speak in terms of what we hope will happen. RiC, I think, is both quite respectful of traditional understandings but at the same time represents a relatively radical reimagining of description, one that more fully recognizes the complexity of records and their history. It makes explicit what was implicit in the existing ICA standards, and more. The hope is that RiC will enable a deeper understanding of records, but also a deeper understanding of the role that description plays (as a context that endeavors to represent contexts) and the role of those that create the description. All said, I think we have managed to identify the major premises for representing context and contexts. RiC is not perfect by any means. Our understanding continues to develop. But, I think, it has advanced our understanding and will be a sound "field of negotiation" for further development.</p>

Source: created by the author.



## Conclusion

In light of the uncertain scenario that is emerging in the near future of archives regarding the impact of the new RiC standard on its principles and practices, we consider, in this preliminary conclusion, following analysis of the RiC-CM-0.2 conceptual model, the implementation research on the Slavery Series, initial implementation of its RiC-O-v0.1 ontology on the Linked Open Archives (LOA) platform and the Atlantic Slave Trade site, that archives, archivists and Archival Science are going to experience important changes in terms of principles and practices. Even if they embraced the RiC standard, it is assumed that they will be broadened with the advent of new technologies of the Semantic Web and Linked Open Data.

These changes are not limited to Archival Science. They have been knocking on the door of all previous standards (ISAD(G), ISAAR(CPF), ISDF and ISDIAH) and inclusion in the approach of multidimensional description to the multilevel approach were the most significant. This multidimensional approach, which is at once multi-contextual and faceted, contains primary entities (Agent, Record Resource, Event, Space, Time) similar to the PMEST fundamental categories (Personality, Matter, Energy, Space, Time), proposed by mathematician and librarian, Shiyaly Ramamrita Ranganathan (1967), and which the author applied to the very same AGCRJ Slavery series (Miranda, 1986).

About how the Records in Contexts ontology (RiC-O-v0.1) can extend and represent the many contexts that present themselves in the current reality of archival documents, we illustrated in the experimental application of it in the AGCRJ Slavery Series, the potentiality that the Linked Open Data universe offers to indicate future connections and contexts beyond the traditional context of the producer of archival documents, which the multilevel approach offers. Presumably, moreover, this new reality, seen through the technologies of Ontology and Linked Open Data, bestows another ethos on archives in the contemporary world. As, in theory, all archival documents can be linked up in the web, it foresees the web itself as an archive and a new object of Archival Science.

On what premises Egad redesigned and expanded the concept of context to Contexts, becomes clear in the statements given by its members. It was because of the resources that Semantic Web and Linked Open Data (LOD) technologies influence and offer in contemporary times, just as Technoscience did in the transition from analog to digital, in 1946 with the Eniac. These premises are not the privilege of Archival Science and the Archivology, but have been knocking on the door for some time now of all applied social sciences and all practices that deal with information and documents.

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