

## **Harmonization and interoperability of metadata schemes used at the National Autonomous University of Mexico (UNAM) repositories: the IIBI-UNAM Repository**

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### **Abstract:**

*As a result of the Open Access (OA) movement, it is undeniable that all over the world there are many completed and ongoing projects of institutional repositories (IR) as a new alternative for scientific communication. IR facilitate access to research outputs, i.e. articles, books, book chapters, theses and dissertations, among other publications. The creation of IR has been widely promoted in Mexico and Latin America. The Institute of Research on Library Science and Information [Instituto de Investigaciones Bibliotecológicas y de la Información, IIBI], as one of the 59 research institutes of the National Autonomous University of Mexico [Universidad Nacional Autónoma de México, UNAM] has developed an IR that manages a collection of more than 2000 LIS publications, all of them in OA. A metadata scheme based on Dublin Core has been developed for the registration of the diverse types of academic publications mentioned above. Harmonization with other metadata schemes has been taken care of in order to achieve interoperability with other repositories, such as TESIUNAM administered by the UNAM General Direction for Libraries [Dirección General de Bibliotecas], which includes more than 500,000 records for dissertations and theses submitted at UNAM schools, out of which 300,000*

*are in OA.IBII also partners with the UNAM Institutional Repository, which aims to achieve the integration, organization, dissemination, and promotion of the contents generated or preserved by UNAM. IBII also cooperates with the National Repository of Mexico, created by the National Council of Science and Technology, which currently aggregates the repositories of 90 universities and academic institutions, including more than 65,000 digital resources. The objective of this paper is to show the main characteristics of the metadata scheme developed by the IIBI for the registration of different types of academic publications, as well as their harmonization and interoperability with the metadata used in the National Repository of Mexico and in the UNAM Institutional Repository.*

**Keywords:** OA Publications, Institutional repositories, Dublin Core, Dspace, Metadata Interoperability.

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Scientific communication can be defined as the process through which the academic and scientific communities share, disseminate and publish their research results to guarantee access to other communities. Nowadays, scientific communication and academic publications have been impacted by technological elements, reaching greater diffusion, visibility and access, acquiring with this a more relevant role. In addition, scientific and academic communities around the world are showing greater interest in having their publications more widely disseminated and accessed, not only by academic and scientific communities, but also by any member of society.

Moreover, Open Access (OA) movement emerged as a proposal from the academic groups to have access to products of their peers, which had become increasingly complicated due to the constant increase of the cost of scientific publications, legal restrictions to give access to the results of research and impediments to use the facilities provided by Information and Communication Technologies (ICT), particularly the Internet, to disseminate the results or products of their work among the scholar and research communities. The OA advocates that the research and teaching work products must be published to be freely consulted by other academic communities and by the public at large, without legal or economic barriers.

The OA movement brought with it the creation of institutional repositories, which support the dissemination and unrestricted access to publications and academic products generated by professors and researchers from universities, higher education and research institutions. However, it is not enough to include only the academic publications in digital format within the repositories, but it is necessary to organize them properly by means of applying standards and metadata schemes, considering the characteristics or attributes of each type of publication to identify and differentiate each resource, allowing the patron to discriminate or evaluate its relevance and therefore decide its access. Equally, it is essential to consider the harmonization and interoperability of metadata, to allow other repositories, and with-it other communities, to have access to the publications from different institutions, both individually and through data harvesting programs.

### **A few words about institutional repositories in Open Access**

OA institutional repositories select, compile, organize, preserve, disseminate and grant free access to full text of publications and other products generated by researchers and professors of universities and research institutions and in most cases, published by said entities. The OA to full text of academic publications constitutes one of the main benefits the institutional repositories offer, being common that this aspect is the most mentioned when referring to them.

Likewise, it should be noted here that, as can be seen in DOAR, more OA repositories have been developed in Social Sciences and Humanities disciplines than in other ones.

It is important to point out that contrary to what the opponents of OA have stated, the procedures and policies to obtain and maintain quality control, peer review or arbitration, dissemination and timely publication in OA resources, particularly are similar to articles from subscription journals. Institutional repositories include articles from OA journals, other ones published in journals that charge a fee to authors (APC), as well as articles whose embargo period has ended

As mentioned, the OA movement promotes unrestricted access to the outcomes of academic and research work, the most representative of which are articles published in academic journals; however, the OA has been extended to other types of publications, which are also the result of academic and research activities, including books, book chapters, papers presented at academic events, dissertations and thesis, educational resources and learning objects, among others, which have also been included in institutional repositories.

Naturally, the inclusion of OA resources in institutional repositories has significantly impacted the process of scientific communication, especially by facilitating the dissemination and access to outcomes of research and academic activities, embodied in the different types of publications.

### **The importance of metadata for repositories**

Generally speaking, repositories have been conceptualized as information systems that gather, preserve, disseminate and give access to the intellectual and academic production of an institution. However, Bustos González, Fernández-Porcel & Johnson (2007) have proposed a broader conceptualization stating that an "Institutional Repository is an electronic file of the scientific production of an institution, stored in a digital format, in which the search and recovery could be for subsequent national and international usage. A repository contains mechanisms to import, identify, store, preserve, retrieve and export a set of digital objects, usually from a web portal. These objects are described by means of labels or metadata that facilitate their retrieval".

This conceptualization implies one of the most important elements that must be considered in the creation of institutional repositories: the organization of information resources is intimately related to the use of metadata schemas, which plays a major role to achieve the adequate organization and retrieval of information resources or publications included in repositories.

An adequate identification and representation of particularities or attributes from resources or publications included in repositories are based on the use of standardized metadata schemas, which include descriptive, administrative and structural metadata. Their main objective is to provide a simple package of elements or data to describe documents and other resources on the Internet. One of the most widely used schemes is the Dublin Core (developed and promoted by the DCMI - Dublin Core Metadata Initiative, an organization that promotes the adoption of interoperable metadata standards) whose name refers to a minimum set of fifteen "central or nuclear" metadata that in turn can be expanded as required to describe resources quickly and easily and without requiring formal training to perform the activity (Coyle, 2004).

## **Defining attributes for academic publications**

Academic publications can be defined as those that contain structured information, knowledge and results of research and teaching processes -funded mostly with public funds and made by members of an academic community (researchers and teachers). In turn, these publications have manifestations in multiple formats: print, digital, multimedia, or all of them. Its purpose is to disseminate research or teaching outcomes so that they can be useful and used to support development and innovation in different scientific and social projects. In short, academic publications allow sharing the results of research and teaching activities of a community among its members, but also among those belonging to other communities, both locally and globally.

With this goal in mind, scientific communication is carried out through the different types of academic publications, which constitute a standardized way of presenting the results of a research, based on scientific methods of experimentation, observation and data analysis that respond to a series of questions (UNESCO, 2015).

As mentioned, institutional repositories are integrated with academic publications of different types, among which are journal articles, books or monographs, chapters of books, papers from proceedings of conferences and other academic events, and dissertations and theses, each one with its own characteristics or attributes.

## **A brief description of IIBI-UNAM Repository**

Due to the very nature of the Institute of Research on Library Science and Information [*Instituto de Investigaciones Bibliotecológicas y de la Información*, IIBI], of the National Autonomous University of Mexico [*Universidad Nacional Autónoma de México*, UNAM], formerly called University Center of Research on Library Science [*Centro Universitario de Investigaciones Bibliotecológicas*, CUIB], OA would not be excluded to its activities, nor the use of technology for the dissemination and access to its publications. Therefore, from 2000 onwards, the journal of this institution "*Investigación Bibliotecológica*" [Library Science Research], which is indexed in the Web of Science, began to be published both in printed and digital format, the latter completely in OA. Additionally, all the volumes and numbers of "*Investigación Bibliotecológica*" published since its first issue in 2006, were converted into digital format, would be consulted in OA by researchers and professors from different countries (CUIB 2009, 33).

Likewise, since 2005 the CUIB has established the policy of publishing their books both in print and OA digital format, and because of that within the CUIBs website, scholars and public at large could have a place where they could download the complete collection of books and its respective chapters.

Another very important type of publications for the IIBI is the set of dissertations and theses advised by IIBI scholars, whose contribution is remarkable. 95% of the IIBI researchers have participated as advisors in the UNAM Graduate Program in LIS. It is important to point out that as a requirement for obtaining his or her degree, UNAM students must deposit their dissertations or thesis in digital format within the database TESIUNAM, which is managed by the UNAM General Direction for Libraries. TESIUNAM includes records of more than 500,000 dissertations and theses submitted to UNAM schools for obtaining the doctor and master degrees, and in other cases, the bachelor degree, according to the UNAM education

system, over 300,000 dissertations and theses are in OA (<http://oreon.dgbiblio.unam.mx/F?RN=713099940>).

Due to the aforementioned, until 2017 the IIBI had three important sources including LIS documents or resources in OA: the web portal of books and book chapters published since 2006, the web portal of “*Información Bibliotecológica*”, and the full text resources from TESIUNAM. However, in order to locate all the existing resources on an author or subject, it was necessary to consult independently each one of these sources. In the end it was one of the reasons for the development of the IIBI-UNAM Repository.

The IIBI-UNAM Repository (<http://ru.iibi.unam.mx/>) is a first-class LIS information resource for researchers, professors and students, both in México and in Latin America.

IIBI Repository’s main features are listed below:

- Type of publications. Includes articles, books, book chapters, papers from conference proceedings, dissertations and theses.
- Software. The IIBI-UNAM institutional repository currently uses the software DSpace v. 6.3 for the storage and management of the publication’s records, which has been modified and adapted to IIBI particular needs.
- Digital objects. Each record has, invariably, at least a PDF file that contains the full text of each publication, there are also some records with links to HTML, e-Pub and Mobil files of publications.
- DOI. All articles and book chapters have a DOI, which is linked to the digital object for its correct identification and location.
- Usability. The repository displays and has a navigation interface that has been designed to improve the patron experience by locating resources and establishing links or relationships between different types of publications.
- Responsive design. Repository interface adapts automatically to tablet, mobile phones and other screen devices.
- Metadata. The metadata scheme is the Dublin Core, expanded to address specific institutional needs, there has been a selection and the creation of metadata for each type of material.

It’s important to point out that a metadata scheme applicable to the different types of academic publications (articles, books, book chapters, papers published in proceedings, dissertations and thesis) has been defined, which allows the registration of its main attributes. The metadata schemas developed for each type of publications are presented in Annex 1.

Among the characteristics of metadata schema designed for being used in the repository, the following stand out:

- Title, subject and summary metadata are designed to accommodate Spanish, English or other languages.

- The designed metadata schema allows establishing bidirectional relationships between an object and its parts, such as a book and its chapters or an article and the corresponding issue of the journal where it was published.

Finally, it is important to point out that the development of the IIBI-UNAM Repository has benefited from the financial support of the National Council of Science and Technology of Mexico [*Consejo Nacional de Ciencia y Tecnología de México*, CONACyT], the agency in charge of integrating the repositories developed by Mexican research centers, universities, and other academic institutions in the overarching National Repository.

### **An overview of the National Repository of Mexico**

In 2014, CONACyT began to implement an OA Repositories Program, whose main objective is to collect, preserve and ensure open access to the resources of scientific, technological and innovation information generated mainly with public resources. To achieve this objective, CONACyT has developed the National Repository, which is a centralized digital platform that integrates information from institutional repositories, which contain information resources (publications and data that have been generated by Mexican institutions that conduct scientific and technological research, whose coordination and operation models are coordinated by CONACyT (Mercado, 2018, CONACyT, 2017).

In the National Repository (<https://www.repositorionacionalcti.mx/>) one can get access to articles of scientific journals, theses prepared in higher education institutions, research protocols, papers from conference proceedings, and patents, as well as other academic documents produced in Mexico with public funding. Currently, the repositories of 90 academic institutions are integrated into the National Repository, including more than 65,000 OA information resources.

Interoperability between the National Repository and institutional repositories is achieved through the implementation of metadata schemes compatible with Dublin Core and the adoption of standards or protocols for metadata and information harvesting based on OAI-PMH and OpenAIRE guidelines (CONACyT, 2017a, 9-10).

To record attributes of resources, a set of 26 Dublin Core metadata has been established, which is shown in Annex 2. This basic scheme that institutional repositories can use, includes mandatory metadata for being harvested by the National Repository, however once mandatory metadata are covered, each institution can expand its scheme, adding another metadata according to their interests or needs. A National Repository particular characteristic is the use of author identifiers, either ORCID, CVU (number assigned by CONACyT to each one of scholars that belongs to the National Researchers System), or RN or CA numbers (number given by CONACyT to scholars in its authority catalogue for authors of publications that do not have ORCID or CVU).

Additionally, syntax used in CONACyT metadata schema is based on the OpenAIRE syntax, as in the following examples:

```
<dc:type>info:eu-repo/semantics/article</dc:type>
```

```
<dc:creator id="info:eu-repo/dai/mx/cvu/123456">Juan Pérez  
Pérez</dc:creator>
```

```
<dc:subject>info:eu-repo/classification/cti/7</dc:subject> where 7 corresponds to  
CONACyT's knowledge area catalog "Engineering and technology "
```

```
<dc:rights>info:eu-repo/semantics/openAccess</dc:rights>
```

### **An overview of UNAM Institutional Repository.**

In November 2018, UNAM established the General Direction for University Repositories, whose main mission is to "Operate, feed and update the UNAM Institutional Repository, in its contents and platforms, in a way that allows integration, organization, cataloguing, preservation, dissemination, and publication of contents generated or preserved by the University, in compliance with its functions related to teaching, research, dissemination and cultural activities (UNAM, 2018, 14)."

UNAM Institutional Repository (<https://repositorio.unam.mx/>) is a digital platform that includes resources from the following sources: TESIUNAM; *Revistas UNAM* [UNAM Journals Portal]; *Biblioteca Nacional Digital de México* [National Digital Library of Mexico] and *Hemeroteca Nacional Digital de Mexico* [National Digital Newspaper Library of Mexico]; *Portal de Datos Abiertos UNAM, Colecciones Universitarias* [UNAM Open Data Portal and Digital University Collections]; and *Recursos Educativos Abiertos* [Open Educational Resources

One of the pillars of the UNAM Institutional Repository is the TESIUNAM Database. As already mentioned, TESIUNAM (<http://oreon.dgbiblio.unam.mx/F>) is the database that includes the dissertations and theses presented in academic entities at UNAM to obtain doctorate, master or bachelor's degree (according to Mexican education system). TESIUNAM contains more than 500,000 records of dissertations and theses presented since 1900, out of which, more than 300,000 are in digital format and have been submitted from 1998 to date.

Records at TESIUNAM database use the MARC format. Annex 3 shows the metadata schema and the syntax used to register each one of them. To transfer and harmonize TESIUNAM metadata in order to be used in IIBI-UNAM Repository represented a challenge

### **Metadata harmonization and interoperability of Mexican repositories**

As described above, academic publications have unique generic attributes; however, the metadata schemes to register them vary between institutional repositories. This situation represents a challenge to achieve harmonization between the metadata schemes used, but also for interoperability between different repositories.

In the case of dissertations and theses registered in TESIUNAM, the MARC format contains metadata compatible with Dublin Core; however, there are also other metadata whose ends are totally different, such as those under labels 3XX in MARC format:

Content type 336 |a text |2 rdacontent  
Media 337 |a computer |2 rdamedia  
Carrier 338 |a on line resource |2 rdacarrier

Likewise, in the metadata scheme developed for the IIBI-UNAM Repository, metadata that is considered as crucial has been included such as:

Rights (Open Access) (dc:rights)  
CC licence (dc:rights.uri)  
Description abstract Spanish (dc:description.resumen)  
Description abstract English (dc:description.abstract)

There is various metadata, and their syntax can be different, such as:

MARC: Physical description (300) |a 1 online resource (236 pages) : |b illustrated  
DC: Pages (dc:format.extent) 236 p.

MARC: Thesis note (502) |b Doctorado en Bibliotecología y Estudios de la  
Información |c Universidad Nacional Autónoma de México, |d 2018 |g  
Programa de Posgrado en Bibliotecología y Estudios de la Información

DC: Degree (dc:description.grado) Doctorado en Bibliotecología y Estudios de  
la Información

DC: Institution that awards the degree (dc:description.institution) Programa de  
Posgrado en Bibliotecología y Estudios de la Información

This situation has led IIBI to develop a mapping scheme between TESIUNAM metadata and IIBI --UNAM Repository metadata, as presented in Annex 4. In addition to metadata mapping, a computer program was developed to automate the harmonization between these two metadata schemas.

On the other hand, it is important to point out that IIBI provides advice to other UNAM schools and academic entities for the development of their repositories and that the metadata scheme developed by IIBI has been adopted by these local repositories. They also use the mapping scheme and program to ingest metadata from TESIUNAM into local repositories. Additionally, the IIBI has submitted to the General Direction for University Repositories, its metadata scheme to transfer the metadata in MARC format created by TESIUNAM to Dublin Core.

As mentioned above, the development of the Repository IIBI-UNAM has received some funding from CONACyT, so it has been integrated into the National Repository. This represented another challenge for harmonization and interoperability between the metadata scheme defined for the IIBI-UNAM Repository and those established by CONACyT for the National Repository. Another mapping scheme between these two groups of metadata (Annex 5) has thus been defined. A set of programs have been developed for the harmonization and the adaptation of the metadata syntax of the IIBI-UNAM Repository with the Open AIRE syntax used in the National Repository metadata.

## Final considerations

Obviously, metadata schemes developed and used in different repositories respond to particular needs and requirements of diverse institutions. However, the interoperability between different repositories implies the need for harmonization between different metadata schemas. The IIBI-UNAM repository project allowed us to develop a metadata scheme based on Dublin Core, according to the characteristics of the academic publications published within the repository and, especially, the needs of its community of users. However, harmonization between the IIBI-UNAM metadata scheme and other schemes used by different repositories and OA sources have also been considered, and that is why our repository is fully compatible with TESIUNAM, the UNAM University Repository and the National Repository of Mexico. This interoperability challenge was faced and overcome with the joint participation of librarians and computer specialists. The foregoing shows that it is possible to achieve an adequate harmonization between metadata used in different repositories and achieve their interoperability to exchange records of different publication types in order to obtain greater dissemination and better access.

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## ANNEXES

ANNEX 1. IIBI-UNAM REPOSITORY METADATA SCHEME			
ARTICLES	BOOKS AND MEMOIRS	BOOK CHAPTERS AND PAPERS	THESES AND DISSERTATIONS
Publication type (Article) dc:type	Publication type (Book) dc:type	Publication type (Book chapter/Paper) dc:type	Publication type (Theses/Dissertation) dc:type
Main author dc:contributor.author Includes autor ID (ORCID, CVU, RN)		Main author dc:contributor.author Includes autor ID (ORCID, CVU, RN)	Main author dc:contributor.author Includes autor ID (ORCID, CVU, RN)
Other authors (Co-authors) dc:contributor.author Includes autor ID (ORCID, CVU, RN)	Other authors (Co-authors) dc:contributor.author Includes autor ID (ORCID, CVU, RN)	Other authors (Co-authors) dc:contributor.author Includes autor ID (ORCID, CVU, RN)	Other authors (Co-authors) dc:contributor.author Includes autor ID (ORCID, CVU, RN)
			Advisor or advisory committee. dc:contributor.advisor Includes autor ID for each advisor. (ORCID, CVU, RN)
Title dc:title	Title dc:title	Title dc:title	Title dc:title
Alternative titles. dc:title.alternative	Alternative titles dc:title.alternative	Alternative titles dc:title.alternative	
	Publication place dc:coverage.spatial)	Publication place dc:coverage.spatial	
<i>Journal Publisher</i> dc:publisher	Publisher dc:publisher	Publisher dc:publisher	
Degree			Degree name dc:description.grado
Institution			Institution that awards degree dc:description.institution
Date issued dc:date.issued	Date issued dc:date.issued	Date issued dc:date.issued	Date issued dc:date.issued
Basic bibliographic citation data ( <i>Journal title, ISSN, volume, number, article pages</i> ) dc:identifier.bibliographicCitation)	Pages dc:format.extent)	Basic bibliographic citation data ( <i>Author or Authors, title pages</i> ) dc:identifier.bibliographicCitation)	Pages dc:format.extent
Spanish abstract dc:description.resumen	Spanish abstract dc:description.resumen	Spanish abstract dc:description.resumen	Spanish abstract dc:description.resumen
English abstract dc:description.abstract	English abstract dc:description.abstract	English abstract dc:description.abstract	English abstract dc:description.abstract
Relation with complete issue dc:relation.ispartofjournal)		Relation with complete book dc:relation.ispartofbook	
Sponsorship dc:description.sponsorship	Sponsorship dc:description.sponsorship	Sponsorship dc:description.sponsorship	Sponsorship dc:description.sponsorship
Publication lenguaje dc:language.iso	Publication lenguaje dc:language.iso	Publication lenguaje dc:language.iso	Publication lenguaje dc:language.iso
Intended audience dc:audience	Intended audience dc:audience	Intended audience dc:audience	Intended audience dc:audience
	ISBN number dc:identifier.isbn	ISBN number (complete book) dc:identifier.isbn	
Subject (Keywords in spanish) dc:subject	Subject (Keywords in spanish) dc:subject	Subject (Keywords in spanish) dc:subject	Subject (Keywords in spanish) dc:subject
Subject (Selected keywords in english) dc:subject.other	Subject (Selected keywords in english) dc:subject.other	Subject (Selected keywords in english) dc:subject.other	
Open Access rigths dc:rights	Open Access rigths dc:rights	Open Access rigths dc:rights	Open Access rigths dc:rights

CC licence type dc:rights.uri	CC licence type dc:rights.uri	CC licence type dc:rights.uri	CC licence type dc:rights.uri
DOI dc:identifier.DOI	DOI dc:identifier.DOI		
			Source TESIUNAM dc:identifier.url
URI (Handle) dc:identifier.uri	URI (Handle) dc:identifier.uri	URI (Handle) dc:identifier.uri	URI (Handle) dc:identifier.uri
Format dc:format	Format dc:format	Format dc:format	Format dc:format

<b>Annex 2. CONACyTs National Repository Metadata</b>			
<b>METADATA</b>	<b>OAI-DC ELEMENT</b>	<b>USE SPECIFICATIONS</b>	<b>USE TYPE</b>
1. Title	dc:title		Mandatory
2. Author (Main)	dc:creator	Use CONACyTs Authority catalog.	Mandatory
3. Author ID	dc:creator	Register author (ID) (ORCID, CVU, DNI, CA, RN)	Mandatory
4. Project ID	dc:relation	Project number (if applicable)	
5. Access Level	dc:rights	Specify Open Access level.	Mandatory
6. CC Licence	dc:rights	Specify CC Licence type.	Mandatory
7. End date of seizure	dc:date	Register seizure period end date.	
8. Alternative ID	dc:relation	Register alternative ID (if applicable)	
9. Published relations	dc:relation	Register another published relations (http, URI, etc.)	
10. Data set relations	dc:relation	Register relations with other data sets (http, URI, etc.)	
11. Subject	dc:subject		Mandatory. Must use CONACyTs knowledge area catalog.
12. Abstract	dc:description		
13. Publisher	dc:publisher		Mandatory if occurs
14. Another authors or contributors.	dc:contributor		Mandatory if occurs
15. Another author or contributor ID	dc:contributor	Register another author ID number (ORCID, CVU, DNI, CA, RN)	Mandatory if occurs
16. Publication date	dc:date		Mandatory
17. Publication type	dc:type	Register publication type.	Mandatory
18. Publication versión	dc:type	Register publication version.	Recommended
19. Publication ID	dc:type	Register DOI number.	Recommended
20. Publication Format	dc:format		Recommended
21. Handle identifier	dc:identifier	Register handle number.	Mandatory
22. Publication source	dc:source		Recommended
23. Lenguaje	dc:language		
24. Relación	dc:relation	Register relations with another versions of the same object.	
25. Publication coverage: Jurisdictional Temporary or Spatial	dc:coverage		Recommended
26. Audience	dc:audience	Register audience type intended.	Recommended

ANNEX 3. TESIUNAM DATABASE METADATA		
METADATA	MARC FIELD	MARC SYNTAX
Cataloguing agency	040	a UNAMX  b spa  c UNAMX  e rda
Author with subfield code e in order to note that a thesis author in México is called "sustentante"	1001	a Amaya Ramírez, Miguel Ángel  e sustentante
Title	24510	a Organización de la información y metadatos en la recuperación de recursos electrónicos en la web /  c tesis que para obtener el grado de Doctorado en Bibliotecología y Estudios de la Información, presenta Miguel Angel Amaya Ramírez ; tutores principales de tesis Filiberto Felipe Martínez Arellano, Juan Voutssas Márquez, Georgina Araceli Torres Vargas
Publication date	2640	c 2018
Physical description	300	a 1 recurso en línea (236 páginas) :  b ilustraciones
Content type	336	a texto  2 rdacontent
Media	337	a computadora  2 rdamedia
Carrier	338	a recurso en línea  2 rdacarrier
Dissertation Notes	502	b Doctorado en Bibliotecología y Estudios de la Información  c Universidad Nacional Autónoma de México,  d 2018  g Programa de Posgrado en Bibliotecología y Estudios de la Información
Restrictions on Access	5060	f Acceso en línea sin restricciones  2 star
Local data notes	592	a D  b 10  c 5089  d 4
Other authors	7001	a <i>Apellido, Nombre  e sustentante</i> <i>En los casos de tesis conjuntas por dos o mas alumnos</i>
Added entry - Advisor	7001	a Martínez Arellano, Felipe  e asesor
	7001	a Torres Vargas, Georgina Araceli  e asesor
	7001	a Voutssás M., Juan  e asesor
Added entry – Corporate name	7102	a Universidad Nacional Autónoma de México,  e institución que otorga el grado
	7102	a Universidad Nacional Autónoma de México.  b Programa de Posgrado en Bibliotecología y Estudios de la Información.  e entidad participante
Electronic location and Access (HTTP)	8564	u <a href="http://132.248.9.195/ptd2018/febrero/0770148/Index.html">http://132.248.9.195/ptd2018/febrero/0770148/Index.html</a>  y Texto completo

ANNEX 4. IIBI UNAM REPOSITORY – TESIUNAM DATA BASE METADATA HARMONIZATION			
IIBI UNAM METADATA	DUBLIN CORE ELEMENT	TESIUNAM METADATA	MARC FIELDS
		Cataloguin agency	040
Publication type (Theses/Dissertation)	dc:type		
Main author	dc:contributor.author	Author	1001
Other authors	dc:contributor.author	Other authors	7001  e sustentante
Advisor or advisory committee	dc:contributor.advisor	Added entry advisor	7001  e asesor
Title	dc:title	Title	24510
Publication date	dc:date.issued	Publication date	2640
Pages	dc:format.extent	Physical description	300
		Content type	336
		Media	337
		Carrier	338
Degree name	dc:description.grado	Dissertation notes	502  b
Institution that awards degree	dc:description.institution	Dissertation notes	502  c  g
Derechos (Acceso Abierto)	dc:rights	Restrictions on Access	5060
		Local data notes	592
Spanish abstract	dc:description.resumen		
English abstract	dc:description.abstract		
Patrocinio	dc:description.sponsorship		
Language	dc:language.iso		
Intended audience	dc:audience		
Subject (Keywords in spanish)	dc:subject		
		Added entry – Corporate name	7102
CC licence type	dc:rights.uri		
URI (Handle)	dc:identifier.uri		
Source TESIUNAM	dc:identifier.url	Electronic location and access (HTTP)	8564

ANNEX 5. IIBI UNAM REPOSITORY – CONACyT METADATA METADATA HARMONIZATION				
METADATA	ARTICLES	BOOKS AND PROCEEDINGS	BOOK CHAPTERS AND PAPERS	THESIS
1. Title dc:title	Title dc:title	Title dc:title	Title dc:title	Title dc:title
	Alternative title dc:title.alternative	Alternative title dc:title.alternative	Alternative title dc:title.alternative	
2. Main Author dc:creator	Main author dc:contributor.author Includes author ID (ORCID, CVU, RN)	Main author dc:contributor.author Includes author ID (ORCID, CVU, RN)	Main author dc:contributor.author Includes author ID (ORCID, CVU, RN)	Main author dc:contributor.author Includes author ID (ORCID, CVU, RN)
3. Author ID dc:creator				
4. Project ID dc:relation	Sponsorship dc:description.sponsorship	Sponsorship dc:description.sponsorship	Sponsorship dc:description.sponsorship	Sponsorship dc:description.sponsorship
5. Access level dc:rights	OA Rights dc:rights	OA Rights dc:rights	OA Rights dc:rights	OA Rights dc:rights
6. Creative Commons licence dc:rights	CC Licence dc:rights.uri	CC Licence dc:rights.uri	CC Licence dc:rights.uri	CC Licence dc:rights.uri
7. Seizure end date dc:date				
8. Alternative identifier dc:relation		ISBN dc:identifier.isbn	ISBN (complete work) dc:identifier.isbn	
9. Relation with other publication dc:relation	Relation with journal dc:relation.ispartofjournal)		Relation with book dc:relation.ispartofbook)	
10. Relation with data set. dc:relation				
11. Subject dc:subject	Subject (Selected Spanish keywords) dc:subject	Subject (Selected Spanish keywords) dc:subject	Subject (Selected Spanish keywords) dc:subject	Subject (Selected Spanish keywords) dc:subject
	Subject (Selected English keywords) dc:subject.other	Subject (Selected English keywords) dc:subject.other	Subject (Selected English keywords) dc:subject.other	
12. Abstract dc:description	Abstract (Spanish) dc:description.resumen	Abstract (Spanish) dc:description.resumen	Abstract (Spanish) dc:description.resumen	Abstract (Spanish) dc:description.resumen
	Abstract (English) dc:description.abstract	Abstract (English) dc:description.abstract	Abstract (English) dc:description.abstract	Abstract (English) dc:description.abstract
13. Publisher dc:publisher	Publisher ( <i>Journal</i> ) dc:publisher	Publisher dc:publisher	Book publisher dc:publisher	
14. Contributor Another authors dc:contributor	Contributor (Co- authors) dc:contributor.author Includes author ID (ORCID, CVU, RN)	Contributor (Co-authors) dc:contributor.author Includes author ID (ORCID, CVU, RN)	Contributor (Co- authors) dc:contributor.author Includes author ID (ORCID, CVU, RN)	Contributor (Co- authors) dc:contributor.author Includes author ID (ORCID, CVU, RN)
15. Contributor ID dc:contributor				Advisor dc:contributor.advisor Includes author ID (ORCID, CVU, RN)
16. Publication date dc:date	Date issued dc:date.issued	Date issued dc:date.issued	Books date issued dc:date.issued	Date issued dc:date.issued
17. Publication type dc:type	Publication type (Article) dc:type	Publication type (book) dc:type	Publication type (Book chapter/Paper) dc:type	Publication type (Theses/Dissertation) dc:type
Degree			Degree name dc:description.grado	Degree
Institution			Institution that awards degree dc:description.institution	Institution
Basic bibliographic citation data ( <i>Journal title, ISSN,</i>	Pages dc:format.extent)	Basic bibliographic citation data ( <i>Author or Authors, title pages</i> )	Pages dc:format.extent	

<i>volume, number, article pages)</i> dc:identifier.bibliographicCitation		dc:identifier.bibliographicCitation)		
18. Publication version dc:type				
19. Publication ID dc:type	DOI dc:identifier.DOI	DOI dc:identifier.DOI		
20. Publication format dc:format	Publication format dc:format	Publication format dc:format	Publication format dc:format	Publication format dc:format
21. Resource identifier dc:identifier	URI (Handle) dc:identifier.uri	URI (Handle) dc:identifier.uri	URI (Handle) dc:identifier.uri	URI (Handle) dc:identifier.uri
22. Cataloguing source dc:source				Source TESIUNAM dc:identfier.url
23. Languaje dc:language	Languaje dc:language.iso	Languaje dc:language.iso	Languaje dc:language.iso	Languaje dc:language.iso
24. Relations dc:relation	Relation with complete issue dc:relation.ispartofjournal		Relation with complete book dc:relation.ispartofbook	
25. Coverage: Jurisdictional, Temporary Spatial dc:coverage		Spatial coverage: publication place dc:coverage.spatial)	Spatial coverage: book publication place dc:coverage.spatial	
26. Audience dc:audience	Audience dc:audience	Audience dc:audience	Audience dc:audience	Audience dc:audience