UTILIZATION OF METADATA STANDARD FOR DESCRIPTION AND FACILITATION OF ACCESS TO LEGAL INFORMATION RESOURCES IN THE NETWORKED DIGITAL ENVIRONMENT

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Abstract

Creation of metadata is generally done to ensure continuous and steady identification, location and access to legal information resources particularly, in networked digital information environment such as the web. This paper discusses utilization of metadata standards for facilitating access to legal information resources in the network digital environment by examining the traditional and ICT related knowledge and skills of the metadata librarian in describing and creating access. Nature of Law, its information resources and use were highlighted to provide background insight for the paper. The emergence of metadata was traced to the traditional function of nascent library cataloguing up to the contemporary application of MARC, BIBFRAME and Linked Data Frameworks for resource description, interoperability, access and resource sharing. Metadata Standards such as Dublin Core and Mark-up Languages such as, XML among others suitable for describing digital information resources were captured for informative and illustrative purposes. Furthermore, types and importance of metadata in organization and facilitation of access to law information resources were equally explained. The paper concluded by drawing attention to the roles metadata librarian play in enhancing the discovery, access and utilization of legal information resources.

Keywords: Metadata, Utilization, Metadata Standards, Legal Information Resource, Network Digital Environment

Introduction

The development of metadata is set within the context of the history of cataloguing as well as parallel emergence in other disciplines. Cataloguing produced catalogue and metadata created metadata of a given information resource.

A catalogue consists of metadata that can be searched, identified, structured and selected (Guerrini, 2023). Although, metadata and cataloguing are similar (Promerantz, 2015 and Gartner, 2016) scholars have drawn distinctive lines between the two (Zeng and Qin, 2015).

For millennia librarians have been working with metadata. The "metadata" is only some couple of decades old. Though what is addressed as "metadata" has traditionally, just been called "bibliographic elements in the library catalogue." The information in a library catalogue is intended to solve a very specific problem: to help users of the library find materials in the library's collection (Pomerantz, 2015; Pacheco, 2023).

Metadata imply myriad insinuations in application and intention. In application context, Stuart Baker, The then United States NSA (National Security Agency) General Counsel mentioned that "metadata tells you everything about somebody's life" thus, "if you have enough metadata you don't really need content" (Schneier, 2015).

This is simply due to the adequate description of the content it provides in such a manner that it becomes almost sufficient to meet the marginal information need of the information seeker. Metadata is data about data or

information about data which does not reflect usage and description of the subject complexity.

The concept of metadata has risen from several different intellectual traditions and the several usages reflect the intentions of communities that use metadata.

Originally, metadata is referred to as 'meta-data', the fragment 'meta' springs from the Greek which implies higher or superior view of the word it prefixes. It is popularly used in databases and programming professions.

On the contrary, the focus of this paper is on managing metadata to streamline access to legal information and enhance the searchability of Legal resources in the networked digital environment.

The network digital environment is a complex web of interconnected sources of information hosted in local and global networks making access to information an ever increasing activity of metadata search.

The World Wide Web for instance, has revolutionised the digital network environment beyond platform for interaction and collaboration but now incorporates the Internet of things, Artificial intelligence and machine learning, decentralised web (web 3.0) characterised by faster and ubiquitous connectivity and also cloud technology and infrastructure such as SaaS(Software as a Service) and PasS (Platform as a Service).

There is no doubt this environment is a host for pool of virtual and digital information resources where scholars and non-scholars alike contribute, access and utilise literary products hosted on platforms (Internet platforms/databases) where less percentage of those output are freely accessible and large percentage of them being paid for by individuals or subscribed to by institutions for full access such as Lexis-Nexis by Nigerian Law School Library on behalf of its students and staff for the advancement and promotion of legal knowledge and best legal practices.

Consequently, in the spirit of promoting standards and ensuring increased access to legal information resources, academic and law libraries are making frantic effort to reengineer traditional metadata to web based. In this regard, the World Wide Web Consortium (W3C) provides a way forward to building the Semantic Web using the Linked Data principles to implement standards that seems to fit well with the legacy metadata produced and maintained by libraries and other cultural institutions (ALA, 2012).

The metadata provides the information seeker with premium descriptive elements and qualitative approach to search information essentially, in the digital information environment.

Hence, the need for management of metadata for optimum user experience and comfort for navigation of walls of information resources within the digitalised library information environment and the Internet networked information hubs that comprises databases and search engines.

Management of metadata in law libraries is a function of the technical department or the resource processing division, as a contemporary nomenclature. It is done to ensure continuous and steady identification, location and retrieval of information.

According to Kardos (2023) The people who manage metadata are "called metadata librarians or cataloguers and that, metadata librarians and cataloguers support research by creating, storing, enhancing, fixing and maintaining the data that describes all types of library resources" thus, "patrons probably rarely see metadata librarians and cataloguers, but their work is what allows for users to come into a library or search the online catalogue and find something they need. Metadata is the engine that powers the library catalogue".

Building descriptive metadata for law resources is a complex technique which requires a combination of general cataloguing principles, intellectual skills and experience with legal publications (Keyon, 1963). The complexity of organising legal information resources lies in the:
a) nature of law itself
b) nature of legal information resources and
c) nature of use by legal professionals.

John-Okeke (n.d) succinct explanation is handy in this case, particularly, with respect to the constituents and challenges with organising legal information resources as she elaborate the implications in the immediate factors mentioned above in the following ways :

Nature of Law

Law is multidisciplinary in nature. It is all inclusive and very wide. There is virtually law of everything. Hence, it is "impossible to divide the subjects of law into neat watertight compartments, as there is inevitably a great deal of overlapping of different aspects of subjects" (Moys, 2013).

This explains why alphabetical listing by authors was accepted initially by law librarians. Some areas of law can be treated as subjects in their own right, or they can be regarded as aspects of other subjects as the case may be (Nwosu, Tuyo and Anichie, 2014).

This is clearly evident in the Library of Congress Classification Scheme which enumerates all disciplines and subjects linearly. This results in scattering law subjects. For instance, forensic medicine can be treated as subject in medicine or a law subject.

Nature of Legal Information Resources

Kenyon's view, when on a specialist approach of the classification of law is "due to the nature of legal materials and the methods of supplementation by pocket parts, loose-leaf pages, semi-loose-leaf supplements, replacement volumes, advance sheets, and other devices (cited in Nwosu, Tuyo & Anichie, 2014).

The manner of 'editions' in law materials is quite different from that of other disciplines. It is very common in law text to have many editions of the same titles. General schemes such as LC and DDC treat legal publications from subject perspectives.

However, Moys organises law collections by their nature and jurisdiction, that is, primary sources, secondary sources, law reference and law journals. This approach facilitates easy access to law and legal publications of a country needed by the users.

Nature of Use by Legal Professionals

Legal professionals are distinct information users. Hence, conventional arrangement in libraries is inadequate for the classification of law materials. Most classification schemes arrange materials by subject or discipline and sub-arrange them by subordinate topics within the main subject.

In contrast, most users of law libraries search for law materials primarily by jurisdiction and secondarily by subject; only sometimes they approach the subject from the point of view of comparative law (Moys, 2013). Moys rationalises that one requirement for countries with a common law background is that common law materials are shelved together while civil law system should be treated individually. This means that the first consideration when cataloguing law materials is the legal system since the legal practitioners approach the subjects of law by their jurisdiction. (as cited in John-Okeke, n.d).

The Nigerian Law School and Law Faculties in Universities are saddled with the responsibility to graduate competent, professional and ethically trained lawyers prepared not only for the herculean task of

adjudication, counseling, and advocacy but for taking up other responsibilities as may be duly assigned.

Lawyers, by the nature of their profession require core, substantial, reliable, current, verifiable, succinct, comprehensive, easily searched and accessible legal information resources to perform their professional duties provided by the law library. They consume vast amount of information mostly found in books of all forms (print or electronic), databases, journals, technical reports and reviews.

There is no doubt that, law information resources and the law library are synonymous tools for the lawyer. Therefore, the Law School must ensure that her library is equipped with robust and tailor-made resources that are within the reach of staff and students.

Consequently, the law librarian must within knowledge and professionalism revamp and engage in creative activities that will scale up access to law library information resources by users such as, adequate utilization of metadata for processing information resources, building and maintenance of metadata database (OPAC) or print catalogue for increased visibility and access to legal information resources physically and remotely on the web.

Emergence of Metadata

The emergence of metadata creation, concept, techniques, management and use originated with the development of library catalogues which is the mainstay of libraries as far back as the period of the Alexandrian Library in ancient Egypt where library catalogues called "pinakes" was created for over 500,000 scrolls with titles grouped by subjects and genre.

This could be accepted as the initial compilation of metadata (Gartner, 2016). This was followed by the European and Western infusion in library cataloguing which was refined in the ecclesiastical to include metrical catalogue for the cathedral at York and subsequently in the academic library.

According to Hynes, (2018) "By the 13th century, the location of books started to appear in catalogue record and in 16th century the first alphabetical arrangement began to appear". The evolvement of metadata drove through series of advancement and modernization of library catalogues such as later, the French code of 1791 which ushered in the first national cataloguing code with author entry, which used cataloguing cards and rules of accessioning. Also, an important aspect of metadata is the cataloguing rules developed by Sir Anthony Panizzi for the British Museum Library published in 1841.

The advancement grew up to the time when rules for dictionary catalogue was developed by Charlse Cutter in 1876 and the UK arm of the American Library Association produced cataloguing rules in the start of 20th century which later led to the institution of a cooperation that birthed the international cataloguing code followed by the forms of author/title catalogue which were incorporated into the first edition Anglo-American Cataloguing Rule (AACR) in 1967.

This edition was revised in 1978 to capture the initiated International Standard Bibliographic Description (ISBD) by IFLA to give room for the emergence of the ACCR2 which improved the way information resources are described specifying sources of information used to describe publication, the of appearance of date element and the punctuation used to separate the elements.

It was an important development that made catalogues interchangeable and convertible into machine readable form. This brought about the use of computer system for the purpose of cataloguing in the 1960s and a new standard for the data format MARC (Machine Readable Catalogue) developed by an American

computer scientist Henriette Avram working with the library of congress for catalogue records was established (Hynes, 2018 and Tennant, et al. 2021).

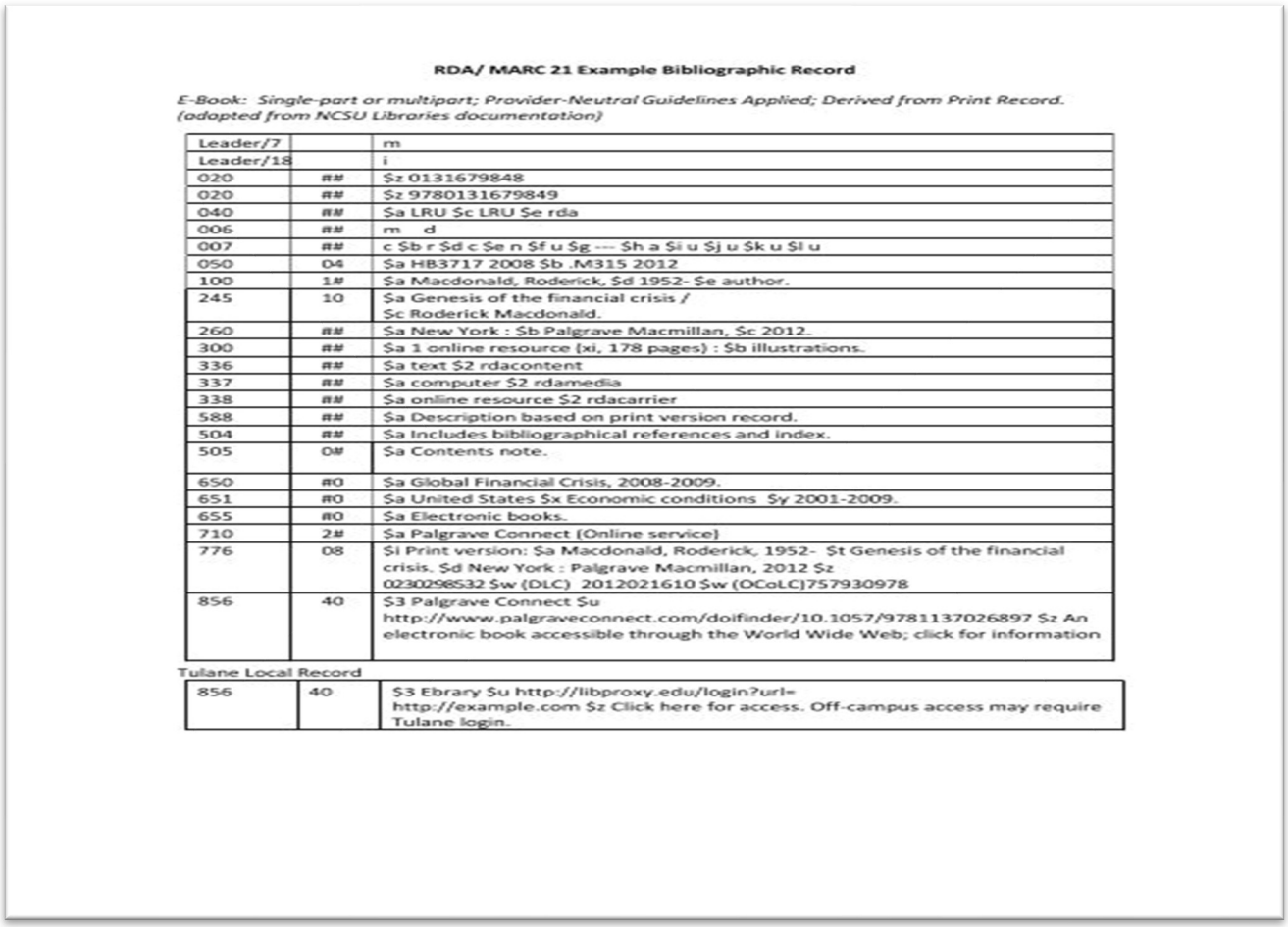
MARC soon had notational versions where countries developed their own kind of MARC such as, USMARC for United States, UKMARC for United Kingdom, NORMARC for Norway and CANMARC for Canada. Despite the fact that these versions were developed to suit their peculiarities, it invariably, hampered international exchange of data. In fact, it was the adoption of MARC 21 that harmonization of national bibliographies was achieved and data sharing became a possibility.

MARC 21 was designed to redefine the original MARC record format for the 21st century and to make it more accessible to the international community. MARC 21 has formats for the following five types of data: Bibliographic Format, Authority Format, Holdings Format, Community Format, and Classification Data Format. Currently MARC 21 has been implemented successfully by The British Library, the European Institutions and the major library institutions in the United States, and Canada. The MARC 21 family of standards now includes formats for authority records, holdings records, classification schedules, and community information, in addition to the format for bibliographic records.

According to Tennant, *et al.* (2021) the future of the MARC formats is a matter of some debate among libraries. On the one hand, the storage formats are quite complex and are based on outdated technology. Therefore, there is no alternative bibliographic format with an equivalent degree of granularity.

The billions of MARC records in tens of thousands of individual libraries (including over 50,000,000 belonging to the OCLC consortium alone) create inertia. The Library of Congress has launched the Bibliographic Framework Initiative (BIBFRAME), which aims at providing a replacement for MARC that provides greater granularity and easier re-use of the data expressed in multiple catalogues.

Figure 1.1 and 1.2 are pictures of MARC 21 and the BIBFRAME model for illustration



RDA/ MARC 21 Example Bibliographic Record

E-Book: Single-part or multipart; Provider-Neutral Guidelines Applied; Derived from Print Record. (adopted from NCSU Libraries documentation)

Leader/7		m
Leader/18		i
020	##	$z 0131679848
020	##	$z 9780131679849
040	##	$a LRU $c LRU $e rda
006	##	m d
007	##	c $b r $d c $e n $f u $g --- $h a $i u $j u $k u $l u
050	04	$a HB3717 2008 $b .M315 2012
100	1#	$a Macdonald, Roderick, $d 1952- $e author.
245	10	$a Genesis of the financial crisis / $c Roderick Macdonald.
260	##	$a New York : $b Palgrave Macmillan, $c 2012.
300	##	$a 1 online resource (xi, 178 pages) : $b illustrations.
336	##	$a text $2 rdacontent
337	##	$a computer $2 rdamedia
338	##	$a online resource $2 rdacarrier
588	##	$a Description based on print version record.
504	##	$a Includes bibliographical references and index.
505	0#	$a Contents note.
650	#0	$a Global Financial Crisis, 2008-2009.
651	#0	$a United States $x Economic conditions $y 2001-2009.
655	#0	$a Electronic books.
710	2#	$a Palgrave Connect (Online service)
776	08	$i Print version: $a Macdonald, Roderick, 1952- $t Genesis of the financial crisis. $d New York : Palgrave Macmillan, 2012 $z 0230298532 $w (DLC) 2012021610 $w (OCoLC)757930978
856	40	$3 Palgrave Connect $u http://www.palgraveconnect.com/doifinder/10.1057/9781137026897 $z An electronic book accessible through the World Wide Web; click for information

Tulane Local Record

856	40	$3 Ebrary $u http://libproxy.edu/login?url=http://example.com $z Click here for access. Off-campus access may require Tulane login.

Figure 1.1: MARC 21 sample of bibliographic record

The BIBFRAME is a data model for bibliographic description. BIBFRAME was designed to replace the MARC standards, and to use linked data principles to make bibliographic data more useful both within and outside the library community (Miller, *et al,* 2012).

BIBFRAME is a tool through that is being utilised for linked data techniques to increase the visibility and usage of library data on the Web but a next-generation ILS must still be created to fully utilize the BIBFRAME tool.

The linked data principle is a set of design principles for sharing machine-readable interlinked data on the Web. Linked Data is one of the core pillars of the Semantic Web, also known as the Web of Data.

When combined with Open Data (data that can be freely used and distributed), it is called Linked Open Data (LOD). A Resource Description Framework (RDF) database such as Ontotext's GraphDB is an example of LOD. It is able to handle huge datasets coming from disparate sources and link them to Open Data, which boosts knowledge discovery and efficient data-driven analytics (Ontotext, 2024).

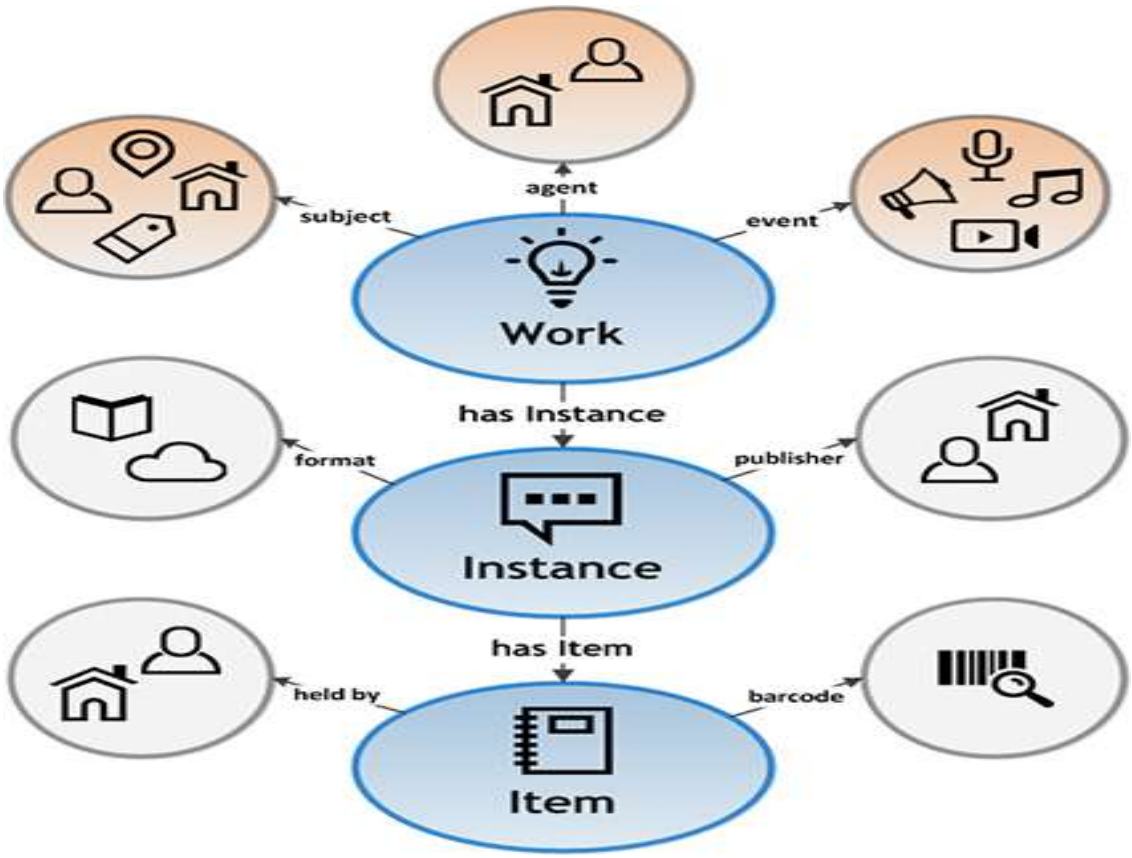


Fig. 1.2: The BIBFRAME 2.0 Model. Library of Congress Network Development and MARC Standards Office

The BIBFRAME organizes this information into three core levels of abstraction: Work, Instance, and Item.

1. **Work.** The highest level of abstraction, a Work, in the BIBFRAME context, reflects the conceptual essence of the catalogued resource: authors, languages, and subjects.
2. **Instance.** A Work may have one or more individual, material embodiments, for example, a particular published form. These are Instances of the Work. An Instance reflects information such as its publisher, place and date of publication, and format.
3. **Item.** An item is an actual copy (physical or electronic) of an Instance. It reflects information such as its location (physical or virtual), shelf mark, and barcode.

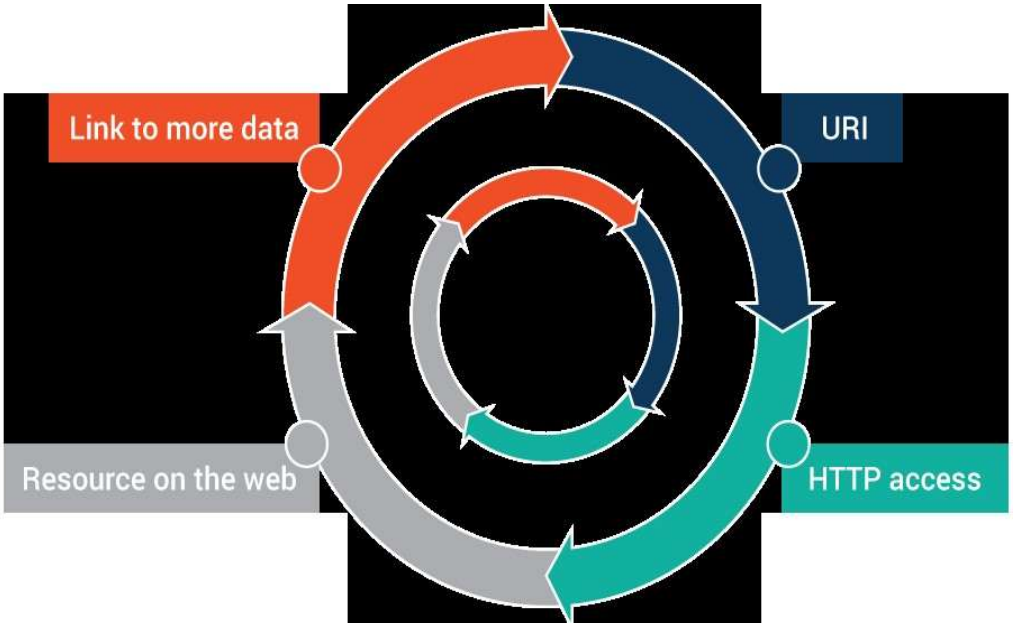


Fig. 1.3: Model of Linked Data

The Semantic Web is about making links between datasets that are understandable not only to humans, but also to machines, and Linked Data provides the best practices for making these links possible. In other words, Linked Data is a set of design principles for sharing machine-readable interlinked data on the Web (Ontotext, 2024).

Human readable metadata range from html meta-tags on web pages to MARC 21 or BIBFRAME records used for exchanging cataloguing data between library management systems.

The metadata can be expressed in a structured language such as XML(Extensible Markup Language) or Resource Description Framework (RDF) and guidelines or schema. For this paper, figure 1.4 is an example of metadata associated with library information resources extracted from the British Library.

Description of Library Metadata Records

Title**: Sapiens: brief history of humankind/Yuval Noah Harari**
Author**: Yuval N.Harari, author**
Subject**: Human Beigns-History**
Dewey:**599.909**
Publication Details: **London Vintage Books, [2015]**
Language: **English**
Identifier: **ISBN 9780099590088 (pkb)**

Fig. 1.4: ***Extract from British Library Main Catalogue***

The field names are highlighted in bold and are equivalent to the data element found in metadata records. Each field is connected to its metadata content which appears alongside the

field name. The same cataloguing information can be displayed on other formats such as MARC 21.

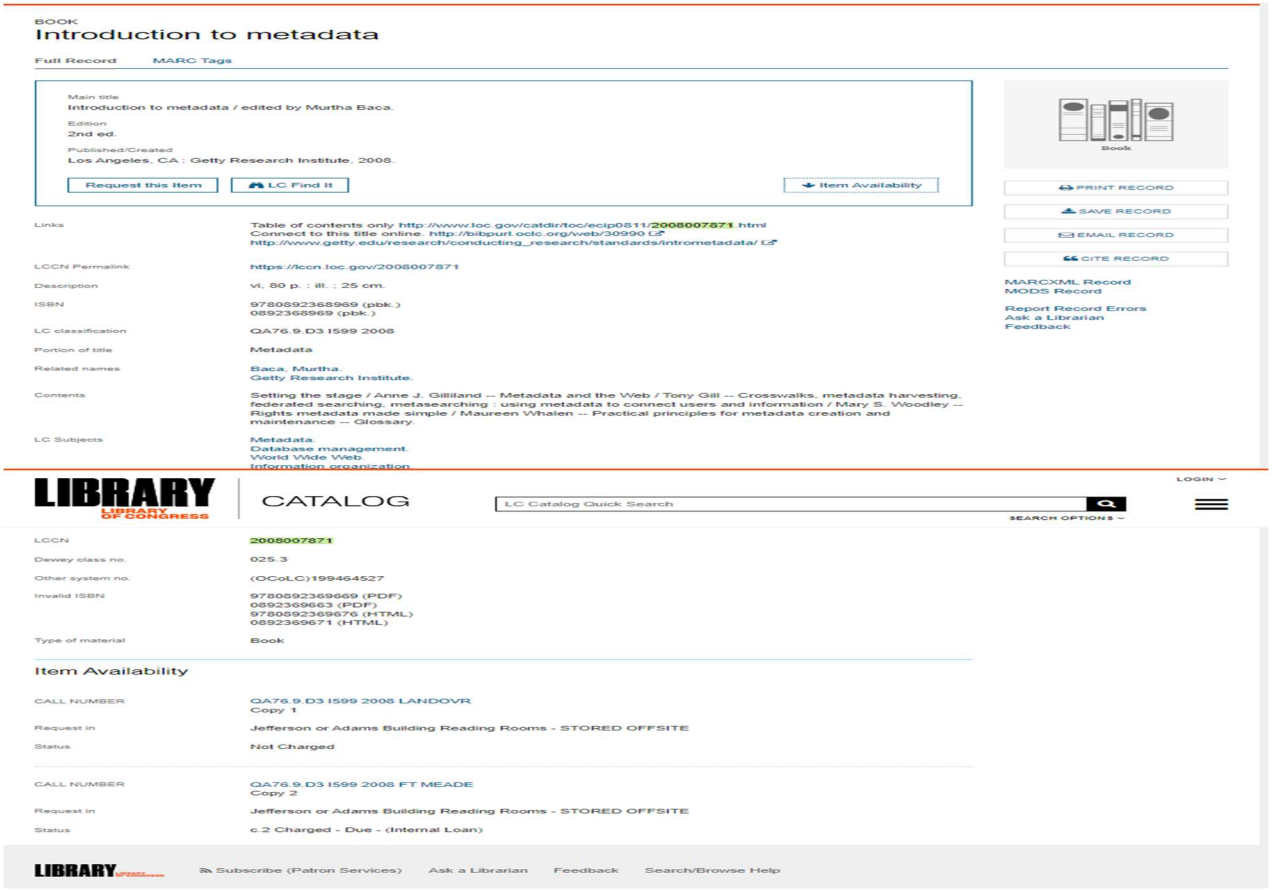


Fig. 1.5: full record of MARC 21 from Library of Congress

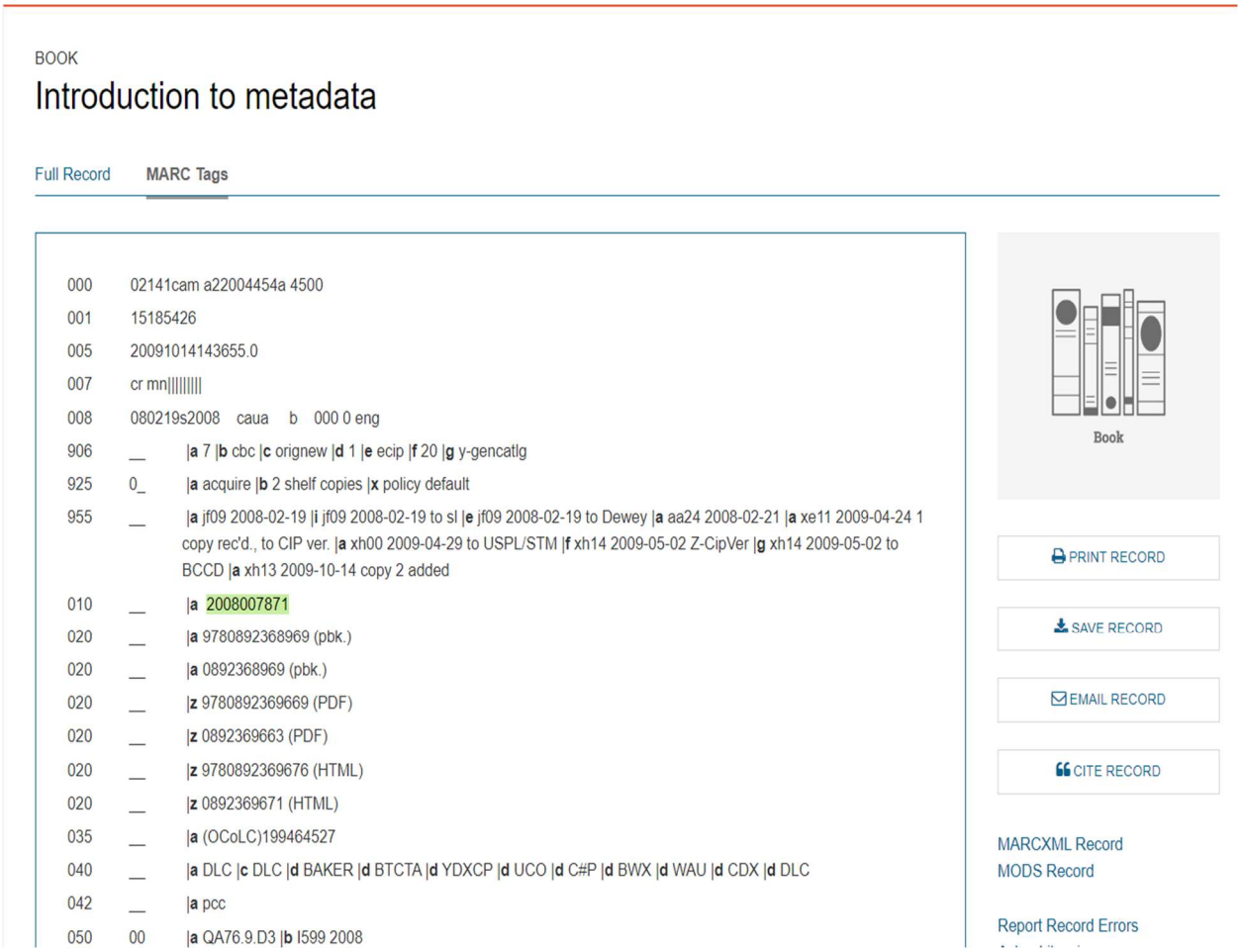


Fig 1.6: MARC metadata tags from library of Congress home page

Metadata Mark-up Languages

One of the appealing aspects of the development of metadata standards has been the convergence of different communities of interests. People recognized the need to work within common frameworks and adopted common languages for describing the data that they handle.

Languages such as Extensible Markup Language (XML) and Resource Description Format (RDF) have played an important role in equipping these communities with a set of tools to describe data and relationships between data elements.

Metadata is used in cataloguing physical and digital information resources and the general concepts are applicable to library catalogue and the embedded metadata in a web page. SGML and XML are the mostly used Document mark-up languages (Haynes, 2018).

The development of mark-up language is an excellent way to express how metadata is expressed and applied in documents.

Metadata are mostly applied in electronic documents that range from web page through to electronic records, text, images and interactive materials. Mark-up languages enables organization to manage large documents that needed to presented in different formats and provides means for defining metadata standards.

They are defined as "computer systems that can automate parts of the document creation and publishing process" Mark-up language containing a combination of text and formatting instructions include: HTML, XML, TEI, and LaTeX.

The table below is an illustration of how a raw text (i.e. the data), the text with formatting instruction (i.e. the mark-up) and the text as it would appear to the reader (i.e. the rendition)

Data (raw text)	Mark-up (text with mark-up instructions)	Rendition (text as it appears to the reader)
This is an example of mark-up text With large, small text as well as bold And italics	this is an example of mark-up text that shows<l>large</l> and <s>small</s>text as well as bold and <i>italics<	This is an example of mark-up text that shows Large and small text as well as **Bold** and *italics*

Source: Hynes, 2018 ***Figure 1.7: illustration of mark-up text***

Standard Generalized Mark-up Language(SGML) is used for describing many web pages and for marking up metadata. This emanated in the 1960s from the work of three IBM researchers, Goldfarb, Mosher and Lorie whose initial letters make up 'GML'. They ascertained that a mark-up language would need three attributes:

a) Common data representation-that allow different systems and applications to process text in the same representation
b) Extensible mark-up-to support all different information to be exchanged
c) Rules for different documents types-formal rules for documents of a particular type used to test their conformance

These attributes provide essential framework for representing clearly identifiable metadata elements. The extensibility of mark-up language allows flexibility in creating metadata tags and document types used to describe the metadata schemas for consistency in their expression in a way that different stylesheets can be applied to the same mark-up text. This implies that the same text can be presented in different ways as printed publication or displayed as a web page viewed with a browser.

The SGML although now withdrawn, was for many years an international standard, ISO 8879 (ISO, 1986) and the basis for mark-up languages. The HTML which is used to encode the content of web pages and extensively used to describe web pages, including the metadata embedded in them as an extension of the SGML. Similarly, the Extensible Mark-up Language (XML) is an open standard that is not controlled by a single vendor; it is a subset of the SGML which presents data in an easy, simple and human readable form. Its specifications are published by World Wide Web Consortium (W3C) and can moreover be used as basis for exchange of data or document between computer systems.

TEI is a specialized markup language widely used in the digital humanities. Although it is not a cataloguing standard its structure facilitates identification and use of structure metadata. Its title statements include title, author and funder information. Other bibliographic information includes edition and publication details. LaTex is equally another specialized markup language developed for scientific and mathematical publications.

Importance of Metadata in Facilitating Access to Legal Information Resources

Effective metadata management is essential for streamlining access to legal information and enhancing the searchability of legal resources in the networked digital environment.

By standardizing metadata formats, enabling granular tagging, facilitating faceted search, promoting interoperability, leveraging linked data, supporting dynamic updating, and incorporating access control mechanisms, legal information systems can deliver a more efficient, comprehensive, and user-friendly experience for legal professionals, researchers, and the general public access to legal information resources is ensured.

The importance of Metadata in accessing legal information resources include but not limited to:

1. Metadata management plays a crucial role in streamlining access to legal information and enhancing the searchability of legal resources in the networked digital environment (Smith, 2018). By implementing standardized metadata formats such as Dublin Core or LegalXML, legal information can be consistently organized and described (Johnson & Doe, 2020). This ensures that legal resources across different platforms and databases can be easily identified and accessed.
2. Granular tagging of legal documents with relevant information such as title, author, date, jurisdiction, keywords, and subject matter enhances searchability by enabling users to perform precise searches based on specific criteria (Brown, 2019). This granular tagging facilitates faceted search, allowing users to narrow down search results by filtering based on various attributes such as date, jurisdiction, document type, and topic (Jones et al., 2021).
3. Metadata management also promotes interoperability between different legal information systems and platforms (Johnson & Doe, 2020). By adhering to common metadata standards and protocols, legal databases and repositories can seamlessly exchange information, making it easier for users to access a wide range of legal resources from diverse sources (Smith, 2018).
4. Leveraging linked data principles, metadata can establish semantic relationships between different legal resources, enabling more sophisticated search and discovery functionalities (Green & White, 2022). Linked data facilitates the exploration of related legal concepts, precedents, and cases, enriching the user's understanding of the legal landscape.
5. Dynamic updating of legal information is enabled by metadata management through versioning and revision tracking capabilities (Brown, 2019). Users can easily identify the latest versions of legal documents and track changes over time, ensuring access to the most up-to-date information (Jones *et al*., 2021).
6. Access control and permissions metadata included in metadata can specify who has access to certain legal resources and under what conditions (Green & White, 2022). This ensures compliance with privacy regulations and confidentiality

requirements while still allowing authorized users to access the information they need.

Furthermore, metadata is not just some "bunch of data" (Bell, 2016) that is collected because it is a duty but rather, it is collected for the purpose it is used for. A wide range of metadata use in library and information profession has been identified as well as. These purposes are put forward by two important models by Day (2001) and Galliland (2016). Day suggested metadata has seven(7) different purposes as follows:

1. Resource Description: identifying and describing the entity (civil Law, international law, e,t,c) that metadata is about
2. Information Retrieval: which is called resource discovery in the context of web resources and the primary focus of the Dublin Core Metadata Initiative
3. Administering and Managing Resources: such as flagging law information resources for update after their period of time have elapsed
4. Intellectual property rights: very crucial in the context of digital platforms such as ecommerce or purchase of law information resources
5. Documenting hardware and software environments: provides contextual information about law information resource that is not applicable to all types of resources
6. Preservation management of digital resources: which is a form of administrative metadata for managing information resources in the Law Library
7. Providing information on context and authenticity: is important in records and archive management. The law librarian should possess the ability to demonstrate the authenticity of information as an essential part of good governance.

Galliland (2016) categorized the purposes of metadata into specific groups and there are some common grounds with that of Day. For instance, Galliland identified metadata for administration (which is equivalent to administration and management in Day's); Description (which encompasses information retrieval or resource discovery); Preservation (as one of the main reasons for metadata); Technical (which correlate to documenting hardware and software in Day's) and use (transactional data in ecommerce system).

Types of Metadata Standards

Metadata standard establishes a common understanding of semantic of data to ensure correct and proper use and interpretation of the data by its owners and users. Figure1.8 shows the types of metadata standards for libraries, library operation and administration.

Type of metadata standard	Definition	Key features	Usage domain	Examples
Descriptive metadata	Provides information about a resource's content for discovery and identification.	Title, abstract, author, keywords for search & retrieval.	Libraries, archives, digital repositories	Dublin Core, MARC
Structural metadata	Reflects compound object assembly, e.g., how pages form chapters.	Displays component order; dictates component relationships.	Digital libraries, multimedia repositories	METS, EAD
Administrative metadata	Manages and administers the resource.	Details resource creation, file type, ownership rights, technical specifics.	Digital archives, institutional repositories	PREMIS, MIX
Rights metadata	Describes licenses and rights of resources.	Defines resource usage terms; accessibility & sharing rights.	Digital publications, multimedia platforms	Creative Commons, ONIX
Preservation metadata	Ensures long-term preservation of digital resources.	Insights into authenticity, provenance; records digital item actions.	Archives, museums	PREMIS, METS
Technical metadata	Details technical resource aspects like file formats.	Information on necessary software/hardware; file specifications.	Digital libraries, media repositories	NISO, AES57
Geospatial metadata	Details about geographic data, such as maps or GIS datasets.	Specifics on coordinate systems, projections; data source info.	Geographic research, environmental studies	FGDC, ISO 19115
Statistical metadata	Informs about production processes of statistical data.	Context about data collection methods; survey instruments info.	Economic research, public policy studies	SDMX, DDI
Semantic metadata	Adds context to data through relationships and semantics.	Defines data element meaning, relationships, logic.	Ontology development, web databases	RDF, OWL
Operational metadata	Relates to runtime and operational aspects during data processing.	Covers execution details, processing tasks, operational statistics.	System operations, data processing systems	PROV-O, BPM

Figure 1.8 types of metadata Source: atlan, 2023

Metadata Standards for Management of Legal Information Resources in Digital Environment

A standard is a document that provides requirements, specifications, guidelines, or characteristics that can be used consistently to ensure that information resource, products, process or library information services are fit their purposes (ISO, 2015).

Documented standards pave the way for future metadata users to understand the convention and intention behind metadata. Operationally, a metadata standard is a set of predefined guidelines that dictate the structure and format of metadata, ensuring consistency in describing and managing data.

Metadata standards are important because they facilitate uniformity and interoperability, enabling effective data management.

Known standards are important tools for controlling the quality of data about legal information resources as they promote greater consistency in description and their analysis which allow for interoperability and metadata exchange between applications and institutions and moreover, aid users to confidently search metadata collections knowing fully where metadata such as, creator (author), date of publication (date(s)), information title, e.t.c. are held.

Metadata can be managed and repurposed for use in new environment and context. The rise of linked data is a substantive illustration of re-use of metadata collections.

However, creation of metadata is usually confronted by the diversity and complexity of sources of data and formats of law information resources. To address this, adopting ubiquitous metadata standards can assist to facilitate data integration, interoperability, and exchange. The most widely used metadata standards include Dublin Core (DC), Data Documentation Initiative (DDI), and Resource Description Framework (RDF).

The Dublin core metadata element is used in this case for illustrative purposes as shown in figure 1.9.

Dublin Core Metadata Element Set

Dublin Core Element	Use	Possible Data Value Standards
Title	A name given to the resource.	
Subject	The topic of the resource.	Library of Congress Subject Headings (LCSH) Faceted Application of Subject Terminology (FAST) Art & Architecture Thesaurus (AAT)
Description	An account of the resource.	
Creator	An entity primarily responsible for making the resource.	Library of Congress Name Authority File (LCNAF) Faceted Application of Subject Terminology (FAST)
Publisher	An entity responsible for making the resource available.	
Contributor	An entity responsible for making contributions to the resource.	Library of Congress Name Authority File (LCNAF) Faceted Application of Subject Terminology (FAST)
Date	A point or period of time associated with an event in the lifecycle of the resource.	W3CDTF
Type	The nature or genre of the resource.	DCMI Type Vocabulary
Format	The file format, physical medium, or dimensions of the resource.	Internet Media Types (MIME) Library of Congress Genre/Form Terms (LCGFT) Thesaurus for Graphical Materials (TGM)
Identifier	An unambiguous reference to the resource within a given context.	
Source	A related resource from which the described resource is derived.	
Language	A language of the resource.	ISO 639
Relation	A related resource.	
Coverage	The spatial or temporal topic of the resource, the spatial applicability of the resource, or the jurisdiction under which the resource is relevant.	Thesaurus of Geographic Names (TGN) Geonames
Rights	Information about rights held in and over the resource.	RightsStatements.org

Figure 1.9: Dublin Core 15 metadata elements for describing information resource

Dublin Core is a simple and flexible standard that defines 15 basic elements for describing any type of resource. DDI is a standard that defines the structure and content of metadata for social and behavioral sciences data. Lastly, RDF is a standard that defines a model and syntax for representing metadata as triples of subject, predicate, and object which can be linked using Semantic Web technologies (LinkedIn Community, 2024). Metadata standards serve as the backbone, ensuring that legal information resources data is not just stored but also understood and utilized effectively.

Other aggregated standard Metadata for library are: Schema; Input/Content Standards and Controlled vocabularies

Schema: these are sets of metadata elements designed for describing a particular type of information resource. The definition or meaning of the elements themselves is known as the semantics of the scheme. The values given to metadata elements are the content (NISO, 2004)

a) Schemas define a set of elements within a context
b) Define rules for machine validation
c) Validation does not find poor inputs such as typos or incorrect information
d) Validation only ensures that required elements are present and that they are presented as outlined in the schema.
e) Provide structure for presentation
f) Discovery interface can be programmed to display metadata elements

Some examples of Library Metadata Schema:

a) DublinCore Metadata Element Set
b) Metadata Encoding and Transmission Standard (METS)
c) Visual Machine Readable Catalogue (MARC) 21
d) Preservation Metadata (PREMIS)
e) Resource Association (VRA) Core
f) European Broadcasting Union (EBU) Core
g) Metadata Object Description Schema (MODS)
h) Encoded Archival Description (EAD)
i) Public Broadcasting (PB) Core
j) Music Encoding Initiative (MEI) Schema
k) Online Information eXchange (ONIX) metadata schema
l) Music Encoding Initiative (MEI) Schema
m) Text Encoding Initiative (TEI) Schema

Input/Content Standards

a) Controls quality of human readable metadata
b) Provides for consistent use of terminology
c) Defines minimum standard for adequate description

Some examples of Library Input Standards:

a) Resource Description and Access (RDA)
b) International Standard Bibliographic Description (ISBD)
c) Anglo American Cataloguing Rules (AACR)
d) Cataloguing Cultural Objects and their Images (CCO)
e) Archives, Personal Papers and Manuscripts (APPM)
f) Describing Archives: a Content Standard (DACS)

Controlled vocabularies: A controlled vocabulary is an organized arrangement of words and phrases used to index content and/or to retrieve content through browsing or searching. It typically includes preferred and variant terms and

has a defined scope or describes a specific domain. (Harpring, 2010).

a) Control vocabulary identify preferred terms among synonyms or comparable topics
b) Define terms and appropriate usage
c) Not mutually exclusive
d) May be created for a specific community or intended for general audience
e) Allow for indexing and display of resources that contain a commonality
f) Most widely known example is subject headings

Examples of Controlled Vocabularies

a) Library of Congress Subject Headings (LCSH)
b) Faceted Application of Subject Terminology (FAST)
c) Sears List of Subject Headings (SEARS)
d) Book Industry Standards and Communications (BISAC) thesauri
e) Getty Thesaurus of Geographic Names (TGN)
f) Thesaurus of Graphic Materials (TGM)
g) Medical Subject Headings (MeSH)
h) Art & Architecture Thesauri (AAT)
i) Rare Book and Special Collection Materials (RMBS) thesauri
j) Library of Congress Name Authority File (LCNAF)
k) Union List of Artist Names (ULAN)

Conclusion

Metadata creation and editing are the processes of generating and modifying metadata records for legal information resources. Library Management Systems (LMS) provide various tools and features to support these processes, such as templates, forms, import and export functions, batch processing, validation, and quality control. LMS may also allow law libraries to create and edit metadata using different formats and schemas, such as MARC, XML, or RDF (Resource Description Framework). LMS may also integrate with external sources of metadata, such as authority files, controlled vocabularies, or linked data services to enhance and enrich the legal information resources metadata records and furthermore to provide mechanisms to ensure the security, privacy, and integrity of legal information resources metadata, such as encryption, authentication, authorization, backup, and recovery.

Way Forward

The function of facilitating access and utilization of metadata is the core responsibility of the law library technical department where acquired legal information resources such as Statutes and Statutory Instruments (Acts, Laws, Bye-Laws, Rules and Regulations etc.); Judicial Decisions (Reported & Unreported Cases); Legal Periodicals (e.g. Law Journals and Magazines);Law Books (Textbooks), Legal Dictionaries and Encyclopedias; Indexes, Digest and Abstracts; Treaties and International Laws; Government Publications (e.g. Government Acts, Bills, Gazettes, Proclamations, Statues, Policies etc.); Non-Legal Materials; Newspapers; Lecture Handouts; Research Reports, Theses & Dissertations; Law Reviews (Umar and Sokari, 2020) that are categorised into primary, secondary and reference sources and other valuable information resources are organised with the aid of a classification scheme (Moy's

scheme) and with a type of library integrated system.

Specifically, some of the ways to utilise metadata for increased searchability and access to legal information resources by law library users include but not limited to:

1. Attraction, recruitment and retention of strong computing skills and passionate technical service librarian who will be dedicated in rendering continuous metadata services that extend beyond the library digitalised information environment
2. Training and retraining of technical services librarians on existing and emerging technologies and techniques in metadata management (such as standards) and on operational knowledge of metadata administration in library and information centre is mandatory

3. Acquisition and culture of timely processing of recommended information resources and upload onto Integrated Library System (ILS) for OPAC (e.g LIB+, KOHA, VTLS, e.t.c) routine should be promoted

4. The metadata librarians and cataloguers should continue to provide research support services by creating, storing, enhancing, fixing and maintaining the data that describes all types of library resources as well as Streamlines processes for metadata cleanup and provides support for metadata transformation and remediation tools such as MarcEdit, e.t.c

5. The metadata librarian should create and continue to update a local metadata database, (much like a bibliographic information or elements) of legal information resources on the web with their links for enhanced search, access and retrieval by the law library users
6. There should be collaboration between the Law Library and its Vendors (for Law databases) on after-sale support services, such as, technical training and user training on the use of their products in the core areas of navigation (e.g Metadata, index, abstract), access and retrieval of information.

7. Researcher: Acting as a researcher, the metadata librarian must maintain a knowledge and familiarity with the new developments in the field. Research is understood to mean systematic investigation and inquiry. The metadata librarian seeks to find information that will speed development of new initiatives within the library. This research often results in new tools for technical services and cataloging staffs.

8. Knowledge sharing: The world of metadata and electronic resource access is a large one, in constant flux as standards are defined, edited, and created, and new ideas on searching and user interfaces are developed. As individual institutions grapple with existing standards and push up against the limits of these standards, libraries have the opportunity to inform, influence, or directly contribute to the metadata schema development.

9. Education: instruction, meshes tightly with the roles above, as it is crucial to ensure that the goals of creating efficient and effective metadata are present in all new library and information technology initiatives. The careful integration of new ideas and practices into those processes that have developed over time in cataloging and description workflows also is necessary. As educator, the

metadata librarian ensures that procedural and workflow changes are accommodated as easily as possible. Metadata librarian positions in the technical services model usually have education or instruction as a specific job duty.

10. Development: development, in this context, means the exploration of options and creation of new or revised approaches. The metadata librarian often must help develop methods to migrate, convert, and enhance metadata, making decisions on how best to balance new possibilities and existing realities. As a developer, the metadata librarian must be aware of the complexities and particulars of metadata schemas so that any needed migration or conversion can be as efficient as possible. The metadata librarian will need to read local documentation (or produce it, based on consulting with collection managers), while keeping in mind knowledge of common standards derived through research and past experience (Chapman, 2007).

References

Brown, A. (2019). Enhancing Access to Legal Information through Metadata Management. *Journal of Legal Information*, 47(2), 123-140.

Chapman, J. W.(2007). The Roles of the Metadata Librarian in a Research Library. *Library Resources and Technical Services*, 51(4).

Green, C., & White, B. (2022). Linked Data in Legal Information Systems: Principles and Applications. *Legal Information Management*, 22(1), 45-63.

Guerrini, M. (2023). *From Cataloguing to Metadata Creation A Cultural and Methodological Introduction.* Facet Publishing Room 150, British Library, 96 Euston Road, London NW1 2DB www.facetpublishing.co.uk.

Harpring, P. (2010). Introduction to Controlled Vocabularies: Terminology for Art, Architecture, and Other Cultural Works. Getty Research Institute.

Hider, P. (2016). Information Resource Description: Creating and Managing Metadata. Facet Publishing.

Hynes, D. (2018). *Metadata for Information Management and Retrieval: Understanding Metadata and its Use*, 2nd Ed. Facet Publishing. 10.29085/9781783302161.019.

John-Okeke, R. (n.d**).** The Challenges of Organising Legal Information Resources: Issues for the Legal and Library Professions in Nigeria*. Journal of Law Librarianship and Information Technology ?(?).*

Johnson, E., & Doe, J. (2020). Standardized Metadata Formats for Legal Information. *Legal Reference Services Quarterly*, 39(3-4), 219-234.

Jones, R., et al. (2021). Faceted Search in Legal Information Systems. *International Journal of Legal Information,* 49(1), 67-84.

Kardos, A.(2023). Libraries: Introduction to Metadata. guides.library.umass.edu/intro_to_metadata/basics.

Kenyon, C. (1963). Law cataloguing. *Library Trends* 11: 280-281. Retrieved from http://www.ideals.illinois. edu/bitstream/ .../librarytrendsv11i3g_opt.pdf?.

Library of Congress. (2017). MARC Standards **https://www.loc.gov/marc/**.

LinkedIn Community (2024).What metadata standards and models are most effective for data governance? /www.linkedin.com/advice/0/what-metadata-standards-models-most effective#:~:text=The%20most%20widely%20used%20metadata,describing%20any%20type%20of%20resource.

Miller, E., Uche O., Victoria M. and Kathy, M. (2012). Bibliographic Framework as a Web of Data: Linked Data Model and Supporting Services.

Moys, E. (2013). Moys classification and thesaurus for legal materials. 5th ed. Berlin: De Gruyter.

NISO (2004). Understanding Metadata. Bethesda, MD: NISO Press, National Information Standards Organization. http://www.niso.org/publications/press/UnderstandingMetadata.pdf

Nwosu, M., Tuyo, O. $ Aniche, C. (2014). The Imperatives of classifying legal materials using Moys classification scheme in Nigerian law libraries. *Information and Knowledge Management* 4(6).

Ontotext, (2024). What Are Linked Data and Linked Open Data?. **www.ontotext.com/knowledgehub/fundamentals/linked-data-linked-open-data/#:~:text=Linked%20Data%20is%20a%20set,is%20an%20example%20of%20LOD**.

Pacheco, A. , Carlos, G. and Maria, C. (2023). A metadata model for authenticity in digital archival descriptions Archival Science (2023) 23:629–673 https://doi.org/10.1007/s10502-023-09422-w.

Pomerantz, J.(2015). *Metadata*, MIT Press. *ProQuest Ebook Central*, http://ebookcentral.proquest.com/lib/ahmadubello/detail.action?docID=4397948. Ahmadu Bello University, Zaria on 2024-05-12 08:27:09.

Smith, T. (2018). Metadata Management for Legal Resources: Challenges and Solutions. *Legal Reference Services Quarterly,* 37(1), 56-72.

Tennant, R.(2021). Librarianship Study and Information Technology. **www.librarianshipstudies.com/p/about.html**.

Umar, H & Sokari, V. (2020). Challenges Associated with Utilization of Legal Information Resources by Postgraduate Law Students in Federal Universities of Northern Nigeria. Information Impact: *Journal of Information and Knowledge Management*, 11(1), 40-47, DOI: dx.doi.org/10.4314/iijikm.v11i1.4.