
METADATA AT DIGITAL-INFORMATIVE ERA

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Abstract

The World Wide Web affords unprecedented access to globally distributed information. Information Technological Innovation with its awareness are delimited by the degree of difficulty involved in acquiring access to related Information. It depends upon both ease of use and its accessibility by its Metadata Strategy. Metadata improves discovery and access of such Informations. This Paper focuses about Metadata and its purpose, different types, role of Information Revaluation with its Management Techniques, with related Dublin Core Concepts. Metadata is key to ensuring that resources will survive and continue to be accessible into the future. In the present Era of Information Technology, NIANP is making innovative effective use on ICT with modern Techniques. It highlights how R&D Unit has effective Utilization with Metadata as an integral part of establishment of Information Services at Library & Information Centre.

Keywords : Metadata Types-Purpose, Digital Identification & Dublin Core, Role of Metadata with Information Management System (IMS)

1. INTRODUCTION

Collection of Items are called Data. The additional Information's about the objects stored within our collections may be Traditional or e-format is represented in the form of Metadata, which is nothing but data about data. In General, metadata is machine understandable information. In Library environment, metadata is commonly used for any formal scheme of resource description, applying to any type of object, digital or non-digital. From Computing Point of View, the content management system contains digital objects. Thus, Metadata is also one of the components of Digital Library. Both Digital objects and Metadata are components of Digital Library. Digital objects are described, structured, summarized, managed and otherwise manipulated in surrogate form through the use of "metadata", which literally means data about data. Metadata is usually produced through a process called "cataloging" that is often carried out by trained librarians. Collections of such information are commonly stored in "catalogs". In computerized environments, metadata may be automatically or semi-automatically extracted or derived from the original content or the "full text" may simply be indexed and searched.

2. WHAT IS METADATA ?

Metadata is "DATA ABOUT DATA" or "INFORMATION ABOUT INFORMATION" Metadata is structured Information that describes retrieval for managing Information Resource. Which states that most data is waste without Metadata. Metadata describes data elements and their attributes such as name, size, data type and also Data Structures like length, field, columns etc. It also has information about the location of data, how it is associated ownership etc. Also, metadata describes specific characteristics about spatial data, which provides guidelines with a Standard Format. The Information may includes Name, Ownership, Description, Currency, Status, Access, Quality, Contact Details etc., It helps us to know where exactly Information locates, Information requirement, relevant Information where exactly locates, even with in another part of your Organization, etc., are the special features of Metadata. Metadata can be encoded in MARC in "keyword=value" pairs or in any other definable syntax. Many current meta data schemes use SGML or XML. XML (eXtensible Mark-up Language) is an extended form of HTML which allows for locally

defined tag sets and the easy exchange of structured information. SGML (Standard Generalized Mark-up Language) is a superset of both HTML and XML and allows for the richest mark-up of a document.

3. PURPOSE OF METADATA

The purpose of metadata according to Haynes the Purpose may be expressed as information retrieval, management of information services, documenting ownership and authenticity, interoperability.

- Information retrieval is a dynamic process which involves the user, the system and the librarian. The system indicates the usage of the computers, but can also be the manual catalogue. To obtain proper retrieval of relevant documents, the metadata representation is most important and should satisfy the users.
- Metadata also helps in management of various information services like OPAC, SDI, etc.
- It is a vehicle for documenting ownership and authenticity of the information.
- It also focuses importance towards the interoperability of information across continents.

Also, the Purpose extends to

- Resource Description
- Administration and Management of Resources
- Record of Intellectual Property Rights
- Documenting Software and Hardware Environments
- Resource Discovery
- Preservation Management of Digital Resources
- Providing Information on context and Authenticity.

4. TYPES OF METADATA

Metadata is divided into different types.

1. Descriptive Metadata
2. Administrative Metadata
3. Structural Metadata &
4. Subject Metadata

They are as follows :

1. Descriptive Metadata :

Descriptive Metadata are used in the Discovery, Indexing & Identification of Digital Resources by semanting means. It is visible to the User of a system. Descriptive Metadata refers to the author, title content, etc. Preservation information refers to the best way of preserving documents like air conditioning or preserving books in the form of files at Systems, which requires meta fields to maintain with.

Eg., MARC Cataloguing Records

2. Administrative Metadata :

To maintain Collections, this Administrative Metadata is used. Administrative Metadata is Managing metadata. Rights management metadata is a form of administrative metadata dealing with intellectual property rights. This Administrative metadata pertains to acquisition, vendor, location, etc., Also, it encompass a variety of data related to viewing, interpretation; use and management of digital objects over time. It includes technical data on creation and quality control, which has rights management, access control and user requirements.

Eg., Vendor's List for NIANP

Again it is divided into two categories such as

a) Management Information :

Managing Information according to User requirements and reflects the output.

Eg., Copyright and License Information.

b) Technical Information

Technical Information expresses the Technical details such as Name of the file, its Type, Hardware, Software, Resolution of the Images scanned, Color space, Pixel dimensions, File relationships, Compressions etc., Using related Information provides User Tracing Information.

Eg., Physical requirements of NIANP

3. Structural Metadata :

Structural Metadata is nothing but interface which complies individual digital object into more meaningful units for the users. Structural metadata indicates how compound objects are put together. Structural Metadata is used for representing Physical Entity through Navigation, Information Display and Display. Searching Contents among them or with in them. Structural metadata has information about Physical forms of the resources.

Eg., Number of chapters for Annual Report of NIANP.

4. Subject Metadata :

To have effective Searching this Subject Metadata is used. For Browsing structure this Subject Metadata is used, with Keywords, Classification Codes, Classification System, Terms from Thesauri and Subject Heading.

5. HOW METADATA IS USED IN TRADITIONAL LIBRARY CATALOGUING ?

Traditional Library Cataloging is a form of metadata, and MARC 21 and the rules sets in AACR2 are metadata standards. Other metadata schemes have been developed to describe various types of textual and non-textual objects such as archival materials, visual materials, geographic information, and science and social science datasets. In mid 1990's Schwartz mentions the term metadata, which is used with database management, began to appear in the LIS literature. However, within a short period the topic became very popular in the area of research concentration, giving rise to several hundred publications, including an ARIST chapter in 1998. Lange and Winkler traced the history of the term metadata back to the 1960s, but noted that it began to appear more frequently in the DBMS literature in the 1980s. Vellucci notes that the term metadata transcends boundaries among various stakeholders in the development of the internet and provides a common vocabulary to describe a variety of data structures.

6. XML (EXTENSIBLE MARKUP LANGUAGE)

XML is a Markup Language in the world of Web Designing and Programming. The markup text is a methodology for encoding data with information about it itself. Examples of markup (encoded data) are universal in the real world. The systematic arrangement of data elements for machine processing contains metadata multiple applications. The Resource Description Framework (RDF) is developed under World Wide Web Consortium (W3C), which enables encoding exchange and reuse of structured Metadata. RDF is a language for representing information about resources of World Wide Web, which is particularly representing Metadata with Web Resources. RDF utilizes XML (eXtensible Markup Language) as a common syntax for processing of Metadata. XML is a simple and very flexible Markup Language with a great technology also runs in any platform with any Environment. The XML syntax is a subset of the International text processing SGML (Standard Generalized Markup Language) which is meant for Web. The XML syntax provides vendor independence, flexible framework, instant push technologies with Channel Definition Format (CDF), Electronic Commerce uses the Open Trading Protocol (OTP) and Mathematical Markup Language (MML), Pre-defined Tags, User Extensibility, Validation, Human Readability, etc., to indicate complex structures. By exploiting the features of XML, RDF focuses the structure of expression of semantics with machine processing standard Metadata.

7. WHAT DOES METADATA DO ?

An important reason for creating descriptive metadata is to facilitate discovery of relevant information. In addition to resource discovery, metadata can help organize electronic resources, facilitate interoperability and legacy resource integration, support digital identification and support archiving and preservation.

8. HOW TO CREATE METADATA ?

To encode Information the Data should be expressed in proper way. Create a Single disk file for each metadata record, that is, one disk file describes one data set. Then use some tool to enter Information into this disk file so that the metadata conform to the standard. The procedure is,

- Assemble Information about the data set.
- Create a Digital file containing the metadata, properly arranged.
- Check the Syntactical Structure of the file. Modify the arrangement of Information and repeat until the syntactical structure is correct.
- Review the content of the metadata, verifying that the information describes the subject data completely and correctly.

9. DIGITAL IDENTIFICATION :

Most metadata schemes include elements such as standard numbers to uniquely identify the work or object to which the metadata refers. The location of a digital object may also be given using a file name, URL, or some more persistent identifier such as a Persistent URL (PURL) or the Digital Object Identified (DOI). Persistent identifiers are preferred because file locations change frequently, making the URL (and therefore the metadata record) invalid. In addition to the actual elements that point to the object, the metadata can be combined to act as a set of identifying data, differentiating one object from another for validation purposes.

10. ARCHIVING AND PRESERVATION

Recently created resources are the current metadata. However, there is a growing concern that digital resources will not survive in usable form into the future. Digital information is fragile; it can be corrupted or altered according to the requirement. It may become unusable as storage media and hardware and software technologies change. Format migration and perhaps emulation of current hardware and software behavior in future hardware and software platforms are strategies for overcoming these challenges.

Metadata is key to ensuring that resources will survive and continue to be accessible into the future. Archiving and preservation require special elements to track the lineage of a digital object (where it came from and how it has changed over time), to details its physical characteristics and to document its behavior in order to emulate it on future technologies. Many organizations internationally are working on defining metadata schemes for digital preservation, including the National Library of Australia (<http://www.nla.gov.au/padi/topics/32.html>), the British Cedars Project (CURL Exemplars in Digital Archives) (<http://www.leeds.ac.uk/cedars/metadata.html>) and a joint Working Group of OCLC and the Research Libraries Group (RLG) (http://www.oclc.org/digitalpreservation/presmeta_wp.pdf). Many of these initiatives are based on or compatible with the ISO Reference Model for an Open Archival Information System (OAIS) which incorporates preservation metadata along with descriptive, administrative and rights management metadata (<http://www.ccsds.org/RP9905/RP9905.html>).

11. RESOURCE DISCOVERY

Metadata serves same functions in resource discovery as good cataloguing does by

- allowing resources to be found by relevant criteria
- identifying resources
- bringing similar resources together
- distinguishing dissimilar resources and
- giving location information

12. DUBLIN CORE:

The Dublin Core Metadata Element Set arose from discussions at a 1995 workshop sponsored by OCLC and the National Center for Supercomputing Applications (NCSA), which brought together Librarians, Digital Library Research Scholars, content experts and text-markup experts to develop discovery standards for electronic resources. As the workshop was held in Dublin, Ohio gave rise to a meta format called in the name of Dublin Core. The continuing development of the Dublin Core and related specifications is managed by the Dublin Core Metadata Initiative (DCMI).

(<http://dublincore.org/>)

It is a 15 element set of descriptors intended to promote author generated description of internet resources (see Table below).

Table: Dublin Core data elements

Group	Element	Description
Content	Title	Name of the resource
	Subject	Topic describing the content of the resource
	Description	About the content of the resource
	Type	The nature of the content of the resource
	Source	A reference to a resource from which the present resource is derived
	Relation	A reference to a related resource
	Coverage	The extent or scope of the content of the resource
Intellectual Property	Creator	Who is primarily responsible for creating the content of the resource
	Publisher	Who is responsible for making the resource available
	Contributor	Who makes contributions to the content of the resource
	Rights	Information about rights held in and over the resource
Instantiation	Date	Date the resource was first manifested
	Format	The physical or digital manifestation of the resource
	Identifier	A unique reference to the resource within a given context
	Language	A language of the intellectual content of the resource

The elements fall into three groups, which roughly indicate the class or scope of information stores in them: elements related mainly to the content of the resource, elements related mainly to the resource when viewed as intellectual property and elements related mainly to the instantiation of the resource.

The Dublin Core Metadata Editor is a service that retrieves a given web page and automatically generates Dublin Core metadata suitable for embedding in the

<head>.....</head>

section of the page. In addition to generating instantly the Dublin Core tags for a given web page, the DCDDot service also provides an editor for users to edit the tags or add or edit contents, which can then be resubmitted to create metadata.

13. ROLE OF METADATA IN INFORMATION MANAGEMENT SYSTEM (IMS)

The role of Metadata in Content Management is something Interesting and worth interrogating. Metadata is used in variety of Situations and applications with widespread web applications. For "Searching" techniques, the metadata role is very very important.

For Eg., The one of the On going Project at NIANP is,

"Isolation and Purification of Buffalo Pituitary hormones and Production of hormone related biological substances"

If the user started searching in the name of "Isolation and Purification" one can get number of references for the above said Topic. The associated keywords are analyzed and the related topics may also appear to satisfy the user needs. The terms can be grouped into associative and hierarchically subordinate or super-ordinate terms. This can be represented with the concept of Isolation and Purification. According to Dr. Ranganathan classification, the Personality, Energy, Matter may be defined. The subordinate terms can be incorporated into the classification schedule and used in assigning subject headings or keywords. This will serve the purpose of the user and the classificationist. However, change of keyword into subject heading is a different procedure. These are all metadata contents. Also, it serves as a good example for Information Retrieval. Finally, the most important fact is that there should be facility in the software for upgradation of the metadata when required. The elements holds related detailed border schema for description, which is enumerated from narrower schema, to increase both recall and precision. This type of Principle is applicable to any type of Information Management System.

14. CONCLUSION

Metadata designing is actually similar like maintaining databases. Carefully designed metadata shows the best information management. Nowadays, Library Professionals have used the concepts behind metadata for Generations. The Information's about Document's content brings power of a database to electronic documents, which helps users to search their concepts like title, author everything very easily. Metadata development will progress through Co-operation between communities of Interest. For retrieval Purpose this Metadata is very much useful, especially when digitalizing the documents, it plays an important role. This Paper highlighted importance of Metadata and how it is helpful to Librarians.

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