Dublin Core

The standard for networking libraries

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Abstract *: Over the last two and half decades, libraries have faced a great challenge to reach out to their users. Libraries have passed through the stages like computerization and digitization. This entire process took place only with the aim to reach their users. Each stage of this evolutionary process has followed certain Standards, one of which is Dublin Core(DC). The DC metadata standard is a simple yet effective element set for describing a wide range of networked resources. It is an exchange format for sharing records among multiple collections*

0. INTRODUCTION :

At the beginning of the new millennium, it is the right time for we librarians to look back at the evolutionary stages of the library and information centers. Over the last two and half decades, libraries have faced a great challenge to reach out to their users. With the rapid development of computer and networking technologies, increasing demand of value added services at different spheres of lives, growing awareness about the value of information and time, libraries had to molded themselves in different fashions to cater the need of users.

However, this metamorphosis was not cheap, in its intellectual, technological and futuristic persp

1. METADATA:

Metadata describes an information resource. The term *meta* derives from the Greek. It means, denoting a nature of a higher order or more fundamental kind. Metadata, then, are data about the data and objects. This can mean many things to different people. To a statistician, it could mean the categories into which figures are sorted, or the methods that were used to collect them. To a word-processing program, it could be the bits that tell it where parts of a document have been stored so that the document can be reconstructed when the mouse is clicked. To a librarian, it could mean a catalog record, or a title page, or a book's index. It could even mean page numbers.

Therefore, a metadata record consists of a set of attributes, or elements, necessary to describe a resource. For example, the common (descriptive) metadata system in library catalog contains a set of metadata records with elements that describe a book or other library item: author, title, edition, date of publication, series, subject heading and the call number specifying location of the item on the shelf. However, metadata functionality goes beyond the cataloging functions of description and access, to include content rating for filtering out sensitive or objectionable material, the linking of physically separate information objects, and description of intellectual property rights of electronic publications.

Metadata is a critical mechanism both in knowledge representation of digital collection and in data mining. They are used to describe digitized and non-digitized resources located in a distributed system in a networked environment.

2.THE DUBLIN CORE :

The DC metadata standard is a simple yet effective element set for describing a wide range of networked resources. It is an exchange format for sharing records among multiple collections. The DC standard originated in 1995 with an invitational workshop of the OCLC organization, held in Dublin, Ohio, which brought together librarians, digital library researchers, content experts, and text-markup experts to promote better discovery standards for electronic resources. This activity evolved into a series of related workshops, which have become collective known as 'Dublin Core Metadata Workshop Series'. One of the primary deliverables of this effort is a set of elements that are judged by the collective participants of these workshops to be the core elements for cross-disciplinary resource discovery. The term "Dublin Core" applies to this core of descriptive elements.

2.1 Goals of Dublin Core:

The goals that motivate the DC effort are :

- *Simplicity of creation and maintenance:* The DC element set has been kept as small and simple as possible to allow untrained people who publish electronic materials to create simple descriptive records for information resources easily and inexpensively, while providing for effective retrieval of those resources in the networked environment.

- *Commonly understood semantics:* The DC shall help a non-specialist searcher to find his or her way by supporting a common set of elements, the semantics of which are universally understood and supported.

- *Conformance to existing and emerging standards:* The DC elements shall comply with other existing, as well as emerging standards of networking.

- *International scope and applicability:* The involvement of representatives from almost every continent in the DC development community has ensured that the development of the standard considers the multilingual and multicultural nature of the electronic information universe.

- *Extensibility:* The DC developers have recognized the importance of providing a mechanism for extending the element set for additional discovery needs. Metadata elements created and administered by other communities can be linked with Dublin Core metadata to meet the need for extensibility. This model allows different communities to use the DC elements for core descriptive information, which will be usable across the Internet.

- *Interoperability among collections and indexing systems :* The DC elements and qualifiers are so designed that for the sake of interoperability, simple indexing and discovery tools should be able to ignore any qualifiers provided, while more advanced, semantically richer tools should be able to use qualifiers to support more specialized or precise discovery.

2.2 The Elements of DC :

The original DC emerged as a small set of descriptors that quickly drew global interest from a wide variety of information providers in the arts, sciences, education, business, and government sectors. The first workshop could designate 13 most common elements, which could be used in describing document-like objects in the networked environment. In the second workshop, held in 1996 in Warwick, England, a model, popularly known as "Warwick Framework", was developed to incorporate more complicated metadata and options of extensibility of DC Metadata Elements (DCME) were delineated. At the time of preparation of this article the latest available version of DC Metadata Element Set (DCMES) was 1.1, issued on 2nd July 1999 and all subsequent discussions are based on that circular. <http://purl.org/dc/documents/rec-dces-19990702.htm>.

The rationale for having only 15 elements was to keep the resource description for purposes of discovery (via search machines) to a minimum, although it is accepted that certain detailed and structured information are necessary through 'Qualifiers' <http://purl.org/dc/documents/rec/dcmes-qualifiers-20000711.htm>.

2.3 DCMES Qualifiers:

Qualifiers modify the properties of Dublin Core statements by specifying the subject, date, relation, etc. Qualifiers currently fall into two classes:

- *Element refinements* make a property more specific without extending its meaning, in other words, these qualifiers make the meaning of an element narrower or more specific, for example, qualifier 'Abstract' or 'Table Of Contents' is modifier of DCME: 'Description', means the 'Description' contains information about the contents of the object described in the metadata.

- *Encoding schemes* are pointers to schemes that aid in the interpretation of an element value. These schemes include controlled vocabularies and formal notations. For example, qualifier LCSH qualifies DCME: 'Subject' to specify that the keyword have been taken from Library of Congress Subject Heading.

Each DCME is optional and repeatable. Metadata elements may appear in any order. The ordering of multiple occurrences of the same element may have a significance intended by the provider, but ordering is not guaranteed to be preserved in every system.

2.4 Attributes of DCMES:

A DCME is a unique identifier defined by a set of ten attributes from ISO/IEC11179 standard <ftp://sdct-sunsrv1.ncsl.nist.gov/x3l8/11179/> for the description of data elements. In the short form these ten attributes are – Name, Identifier, Version, Registration Authority, Language, Definition, Obligation, Datatype, Maximum Occurrence and Comment. However, six of the above ten attributes (will not be repeated in the subsequent part of this article, at the time of defining each element) are common to all the DC Elements. These are:

Attributes	Value
Version	1.1
Registration Authority	Dublin Core Metadata Initiative
Language	en
Obligation	Optional
Datatype	Character String
Maximum Occurrence	Unlimited

Before going into the detail tabulated presentation of the definition of each element, it is however, essential to mention that the metadata elements fall into three groups

<http://purl.org/DC/documents/wd/usageguide-20000716.htm>, which roughly indicate the class or scope of information stored in them:

1. Elements related mainly to the **Content** of the resource,
2. Elements related mainly to the resource when viewed as **Intellectual Property**, and
3. Elements related mainly to the **Instantiation** of the resource.

ATTRIBUTES OF DCME:

CONTENT			
DCME	**ATTRIBUTES**		
	Name	**Identifier**	**Definition**
TITLE	Title	Title	A name given to the resource
SUBJECT	Subject and Keywords	Subject	The topic of the content of the resource
DESCRIPTION	Description	Description	An account of the content of the resource
TYPE	Resource Type	Type	The nature or genre of the content of the resource
SOURCE	Source	Source	A Reference to a resource from which the present resource is derived
RELATION	Relation	Relation	A reference to a related resource
COVERAGE	Coverage	Coverage	The extent or scope of the content of the resource
INTELLECTUAL PROPERTY			
CREATOR	Creator	Creator	An entity primarily responsible for making the content of the resource
PUBLISHER	Publisher	Publisher	An entity responsible for making the resource available
CONTRIBUTOR	Contributor	Contributor	An entity responsible for making contributions to the content of the resource
RIGHTS	Rights Management	Rights	Information about rights held in and over the resource
INSTANTIATION			
DATE	Date	Date	A date associated with an event in the life cycle of the resource.
FORMAT	Format	Format	The physical or digital manifestation of the resource
IDENTIFIER	Resource Identifier	Identifier	An unambiguous reference to the resource within a given context.
LANGUAGE	Language	Language	A language of the intellectual content of the resource

3.THE HTML SYNTAX FOR DUBLIN CORE:

The DCME can be placed in several different syntaxes, including: Hypertext Markup Language (HTML), Resource Description Framework (RDF) using eXtensable Markup Language (XML), etc. However, this article has discussed only about the HTML syntax.

As such metadata are invisible when displayed through a browser. Dublin Core are to be hidden in the <HEAD> section of an HTML document. Indexing programs understand that the metadata record starts after the "<HEAD>" line and ends before the "</HEAD>" line, and are thus able to extract metadata automatically. Therefore, metadata tags shall be embedded within the HEAD section of the HTML document. In HTML, each record element definition begins with '<META' and ends with '>'. Within the META tag, two attributes are used to define the metadata. The first is NAME, the second, CONTENT. These two work together to define the metadata within the <META …> tag.

A simple HTML syntax with DC Metadata of this article is given below. The metadata part is highlighted with bold letters.

```
<HTML>
   <HEAD>
        <TITLE>NACLIN 2000 ARTICLE : Dublin Core</TITLE>
        <META NAME="DC.Title" CONTENT=" Dublin Core ; The standard for networking libraries">
        <META NAME="DC.Creator.PersonalName" CONTENT="Guha, Tamal Kumar”>
        <META NAME="DC.Subject" CONTENT="Dublin Core ; Interoperability ; Standard">
        <META NAME="DC.Publisher" CONTENT="DELNET">
        <META NAME="DC.Date" CONTENT="2000">
        <META NAME="DC.Type" CONTENT="text">
        <META NAME="DC.Description" CONTENT="Dublin Core Metadata set and implementation of
        the same in HTML syntax has been discussed in details”>
   </HEAD>
<BODY>
<h1 align=center><font size=24 face="Century Gothic"><b>Dublin Core</b></font></h1>
<p align=center><font size=4 face="Century Gothic">The standard for networking  libraries</font></p>
<p align=center><font size=4 face="Century Gothic"><b>Tamal Kumar Guha</b></font></p>
<p align=center><font size=1 face="Century Gothic">Assistant Librarian, Indian Institute of Technology,North
Guwahati, Guwahati, Assam, India, Pin-781 031, <a href="mailto:tam@iitg.ernet.in"> tam@iitg.ernet.in
</a></font></p>
<p align=left><font size=4 face="Times New Roman"><b>0. INTRODUCTION :</b></font></p>
<p align=left><font size=3 face="Times New Roman">At the beginning of the new millennium, it is the right time
for we librarians to look back at the evolutionary stages of the library and information centers. Over the last two
and half a decade, libraries have faced a great challenge to reach out to their users. With the rapid development of
computer and networking technologies, increasing demand of value added services at different spheres of lives,
growing awareness about the value of information and time, libraries had to molded themselves in different fashions
to cater the need of users.</font></p>
</BODY>
</HTML>
```

3.1 DC Metatag generators :

It is good news for many of us that few Metatag generators are now available and some of them can be downloaded from web. **Metabrowser <**http://metabrowser.spirit.net.au/> and **TagGen – Dublin Core Edition** <http://www.hisoftware.com> are the commercial software, which help in generating metadata and metatag. The detailed list of metadata tools can be checked from the site <http://purl.oclc.org/dc/tools/index.htm>.

4.ANSI/NISO Z39.85-200x :

The Draft Standard of The Dublin Core Metadata Element Set, known as ANSI/NISO Z39.85-200x, defines fifteen metadata elements for resource discovery in a multidisciplinary information environment. The National Information Standards Organization (NISO) of the American National Standards Institute (ANSI) circulated the Draft Standard for voting, which is over by 15th August 2000. The 'Task Force' of the review of Z39.85, a part of Committee on Cataloging: Description and Access (CC:DA) of American Library Association has also finalized and submitted the final report on the draft standard and recommended a few modifications of the standard. Z39.85 has been approved, however, administrative processes are going on.

5. CONCLUSION :

In the era of knowledge networking and electronic publishing, it has become an extreme necessity to design the resources of Library and Information Centers in a standardized way so any web visitor can do the retrieval of all stored knowledge easily, efficiently and fully. The Dublin Core can help in a very useful way to achieve goal.

Sources Consulted:

1.A Grammar of Dublin Core
<http://www.gmd.de/People/Thomas.Baker/DC-Grammar.html>

2. Ahronheim, Judith R. (1998). Descriptive Metadata: emerging standards. *Journal of Academic Librarianship*. Vol.24; 395-403

3. Alvestrand, H. Tags for the Identification of Languages, RFC 1766, March 1995.

4.CC:DA Task Force on the Review of ANSI/NISO Draft Standard Z39.85, the Dublin Core Metadata Element Set
<http://www.ala.org/alcts/organization/ccs/ccda/tf-dc1.html>

5.Dublin Core Metadata Initiative /
<http://purl.org/DC/documents/wd/usageguide-20000716.htm>

6. The Dublin Core Metadata Initiative 8th Plenary Workshop
<http://purl.oclc.org/dc/workshops/dc8conference/plenary/index.htm>

7. Dublin Core Metadata Initiative / Documents / Recommendations / Dublin Core Element Set, Version 1.1
<http://purl.org/dc/documents/rec-dces-19990702.htm>

8. Dublin Core Metadata Initiative / Dublin Core Qualifiers
<http://purl.org/dc/documents/rec/dcmes-qualifiers-20000711.htm>

9. Dublin Core Metadata Initiative / Tools
<http://purl.oclc.org/dc/tools/index.htm>

10. HiSoftware Online - Your Web Site Promotion and KM metadata authority
<http://www.hisoftware.com/>

11. The Dublin Core Metadata Element Set
<http://www.niso.org/z3985.html>

12. Weibel,S., Kunze,J., Lagoze,C., Wolf,M. Dublin Core Metadata for Resource Discovery, RFC 2431, September 1998.