

# Chapter 1

## General Introduction and Concepts

### 1.0 Introduction

Since its inception in early 2014, National Digital Library (NDL) Team has been continually trying to improve on different aspects and issues related to building National Digital Library of India. In this document, an attempt has been taken to bring out a consolidated document by incorporating all possible relevant metadata from Qualified Dublin Core (QDC), IEEE LOM, Learning Resource Metadata Initiative (LRMI), MPEG-7 standard and Shodhganda. Therefore, the NDL Metadata structure (version 2.0) deals with exhaustive listing of all possible metadata elements and its explanation with respect to its application. The Manual contains following types of metadata:

- Generic Metadata
- Educational Metadata
- Multimedia Metadata
- Theses & Dissertation Metadata

### 1.1 Generic Metadata

Chapter 2 deals with generic metadata to describe the digital resources. Generic metadata are based on Qualified Dublin Core (QDC).

## **1.2 Educational Metadata**

Educational metadata are basically those elements, which are specially related to educational aspects of the digital documents. Chapter 3 deals with educational metadata. The set of metadata elements is compiled based on two metadata standards i.e. IEEE LOM and Learning Resource Metadata Initiative (LRMI). Most of the metadata elements under this category are based on LRMI.

## **1.3 Multimedia Metadata (MPEG-7)**

Chapter 4 deals with metadata for multimedia documents like audio and video. MPEG-7 is an ISO/IEC standard developed by MPEG (Moving Picture Experts Group). The MPEG-7 standard, formally named “Multimedia Content Description Interface”, provides a rich set of standardized tools to describe multimedia content.

## **1.4 Theses & Dissertation Metadata**

Chapter 5 deals with Thesis and dissertation related metadata. For the case of Theses Metadata, Shodhganga of INFLIBNET metadata standard has been followed.

## **1.5 Vocabulary for Educational Metadata**

Chapter 7 discusses the use of Vocabulary in some fields under educational metadata.

## **1.6 Metadata Schema**

### **1.6.1 Qualified Dublin Core**

The Dublin Core Metadata Element Set (DCMI) is a vocabulary of fifteen properties for use in resource description. The name "Dublin" is due to its origin at a 1995 invitational workshop in Dublin, Ohio; "core" because its elements are broad and generic, usable for describing a wide range of resources. The DCMI recognizes two broad classes of qualifiers:

- **Element Refinement.** These qualifiers make the meaning of an element narrower or more specific.

- **Encoding Scheme.** These qualifiers identify schemes that aid in the interpretation of an element value. These schemes include controlled vocabularies and formal notations or parsing rules.

The qualifiers below are recommended for the Subject element.

- Library of Congress Subject Headings (LCSH)
- Medical Subject Headings (MESH)
- Dewey Decimal Classification (DDC)
- Universal Decimal Classification (UDC)
- Library of Congress Classification (LCC)

### 1.6.2 IEEE LOM

**Learning Object Metadata**, usually encoded in XML, is used to describe a learning object and similar digital resources used to support learning. The purpose of learning object metadata is to support the reusability of learning objects, to aid discoverability, and to facilitate their interoperability, in the context of online learning management systems (LMS). The IEEE 1484.12.1–2002 Standard for Learning Object Metadata (LOM) is an internationally recognized open standard for the description of “learning objects”. The IEEE defines a learning object as “**any entity, digital or not-digital, which can be used, re-used, or referenced during technology supported learning.**”

### 1.6.3 LRMI

The Learning Resource Metadata Initiative (LRMI) project had been initiated in July 2011 to make it easier for teachers and learners to find educational materials through major search engines and specialized resource discovery services (Barker and Campbell, 2014). In order to understand the approach of LRMI, Schema.org has been introduced. Schema.org is sponsored by Google, Microsoft, Yahoo and Yandex. Schema.org has two components; **an agreed ontology**, i.e. a hierarchy of resource types and **vocabulary for naming the characteristics** of resources.

### 1.6.4 MPEG-7 Standard

MPEG-7 has been developed by experts representing broadcasters, electronics manufacturers, content creators and managers, publishers, intellectual property rights managers, telecommunication service providers and academia. It offers a comprehensive set of audio-visual Description Tools to create descriptions to multimedia content. The description tools comprises metadata elements and their structure and relationships that are defined by the standard in the form of Descriptors and Description Schemes that enable the needed effective and efficient access (search, filtering and browsing).

### **1.6.5 Shodhganga**

Shodhganga is a reservoir of Indian PhD Theses. On the other hand, Shodhganga can also be called as Indian metadata standard developed by INFLIBNET India for Theses and Dissertation.

## **1.7 Requirement Specification**

As NDL focus primarily on building repository of educational materials, the specification will focus on describing educational materials. The requirements can be categorized into following classes:

- Generic Metadata
- Educational Metadata
- Audio- Visual Metadata
- Theses & Dissertation Metadata
- Legal Metadata

## **1.8 Required Extensions**

Most of the metadata fields specified above are covered in Dublin Core metadata standard. However, extension to the standard has to be made for the following data fields:

- **Prerequisite resources:** Resources that are required to understand content can be specified through this metadata field. The references to prerequisite resources can be made through specification of the associated URIs

- **Type of learning material:** Learning material type in form of animation, simulation, exercise, problem statement etc. can be specified through this field. IEEE-LOM metadata standard uses 'learningResourceType' to represent this metadata field.
- **Difficulty level:** For a given educational level or grade level, different difficulty levels can be attributed to content. This field marks the difficulty or ease of understanding content.
- **Board:** This metadata is used to specify educational board that uses a resource in its curriculum.
- **Source Organization:** This metadata refers to the organization from which a resource has been harvested.
- **Audio-visual Metadata:** detailed description of the audio visual material based on the MPEG 7 standard that has been mapped with Dublin Core Metadata elements.
- **Thesis related metadata:** This set of metadata is used to describe masters and doctoral level thesis. Shodhganga metadata schema is adopted here.

### 1.9 Application Profile for Metadata Extension

Dublin Core Application Profile (DCAP) provided a framework for defining application or domain specific metadata schema. DCAP for a metadata schema defines the data model suited for a particular domain or application to ensure semantic interoperability. DCAP is generic framework and does not require the use of specific metadata terms like DCMI. However, a DCAP specification has to be translated into specific schema specific term vocabulary before deploying it into a real application.

A DCAP specification consists of the following components:

- **Functional Requirement:** Describes what the community wants to achieve with an application
- **Domain Model:** Describes domain entities and their relationships
- **Description Set Profile and Usage Guideline:** Enumeration of metadata terms, constraints defines over terms and usage guidelines.
- **Syntax Guideline:** Encoding records in machine readable format

Each term in a metadata schema can be described using a template. This document follows DCAP template defined in ‘**Library Application Profile**’ (DC-Lib) (Guenther, 2004) with necessary extension and brevity. Template for defining items in application profile description is as follows:

Name of Term	A unique token assigned to the term
Fully Specified Namespace	Full specification of namespace hierarchy for the term
Term URI	A Uniform Resource Identifier used to identify the term.
Defined By	An identifier of a namespace, pointer to a schema, or bibliographic reference for a document within which the term is defined.
Definition	The definition of the term in the namespace in which the term was originated.
Comments	Comments on the term from the namespace in which the term originated.
Type of term	The grammatical category of the term (e.g. "Element", "Element Refinement", or "Encoding Scheme").
Encoding Scheme For	The described term, an encoding scheme, qualifies the referenced term. Using an encoding scheme will aid in the interpretation of an element value. These schemes include controlled vocabularies and formal notations or parsing rules. A value expressed using an encoding scheme will thus be a token selected from a controlled vocabulary (e.g.,

	<p>a term from a classification system or set of subject headings) or a string formatted in accordance with a formal notation (e.g., "2000-01-01" as the standard expression of a date). If an encoding scheme is not understood by a client or agent, the value may still be useful to a human reader.</p> <p>In some cases, encoding schemes not yet registered are indicated. These will be registered and/or approved by the DCMI Usage Board as DC Encoding Schemes in the future.</p>
<p>Has Encoding Scheme</p>	<p>The described term is qualified by the referenced encoding scheme.</p>
<p>Obligation</p>	<p>Indicates whether the element is required to always or sometimes be present. In this application profile the obligation can be: mandatory (<b>M</b>), mandatory if applicable (<b>MA</b>), strongly recommended (<b>R</b>) or optional (<b>O</b>). Mandatory ensures that some of the elements are always supported and mandatory if applicable means that this element must be supported if the information is available. An element with a mandatory obligation must have a value. The strongly recommended and the optional elements should be filled with a value if the information is appropriate to the given resource but if not, they may be omitted.</p>
<p>Occurrence</p>	<p>Indicates any limit to the repeatability of the element.</p>

Example Usage	Taken from NPTEL, CEC, INFLIBNET and other e-content projects of NMEICT
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## Chapter 2 Generic Metadata

### 2.0 Application Profile for Generic Metadata

The generic metadata describes general attributes of contents. Categories of generic content metadata are as follows:

#### 2.1 Contributor

Name of Term	<b>Contributor</b>
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Fully Specified Namespace	dc.contributor
Term URI	<a href="http://purl.org/dc/elements/1.1/contributor">http://purl.org/dc/elements/1.1/contributor</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	An entity responsible for making contributions to the content of the resource.
Comments	Examples of a Contributor include a person, an organization, or a service. Typically, the name of a Contributor should be used to indicate the entity.
Type of term	Element
Has Encoding Scheme	No
Obligation	O
Occurrence	MIN=0, MAX=infinite

### 2.1.1 Author

Name of Term	<b>Author</b>
Fully Specified Namespace	dc.contributor.author
Term URI	
Defined By	
Definition	A set of entities who have authored the content of the resource.
Comments	Examples of Author include a person. Typically, the name of an Author should be used to indicate the entity.
Type of term	Element
Has Encoding Scheme	No
Obligation	O
Occurrence	MIN=0, MAX=infinite
Example	last name, first name (e.g - Basu, Swaraj)

**Example (Author):** It indicates name(s) of author of the content. Entering one author name, pressing add button, another author name can be entered. In this fashion, more than one author name can be entered. It is not a mandatory field. The field may be left as blank.

### 2.1.2 Illustrator

Name of Term	<b>illustrator</b>
Fully Specified Namespace	dc.contributor.illustrator
Term URI	
Defined By	
Definition	A person or group responsible for illustrations contained in an item.
Comments	Applicable to illustrations in books, learning materials etc
Type of term	element
Has Encoding Scheme	No
Obligation	O
Occurrence	MIN=0, MAX=infinite
Example	last name, first name (e.g - Basu, Swaraj)

**Explanation (Illustrator):** It Indicates name(s) of illustrator of the content. Illustrator in the case of videos will be those creating graphics, animations etc. Entering one illustrator name, pressing add button, another illustrator name can be entered. In this fashion, more than one illustrator name can be entered. It is not a mandatory field. The field may be left as blank.

### 2.1.3 Editor

Name of Term	<b>Editor</b>
Fully Specified Namespace	dc.contributor.editor
Term URI	
Defined By	
Definition	A person or group responsible for editing of an

	item.
Comments	Applicable to editing in books, learning materials etc
Type of term	element
Has Encoding Scheme	No
Obligation	O
Occurrence	MIN=0, MAX=infinite
Example	LastName, FirstName (e.g - Basu, Swaraj)

**Explanation (Editor):** It indicates name(s) of editor of the content. In the case of A/V resources it will be the technical editor of the programme. Entering one editor name, pressing add button, another editor name can be entered. In this fashion, more than one editor name can be entered. It is not a mandatory field. The field may be left as blank. Selecting one editor name and using ‘**Remove selected**’ button, one can remove selected editor name. May be left as blank.

#### 2.1.4 Other

Name of Terms	Other
URI:	<a href="http://purl.org/dc/elements/1.0/contributor">http://purl.org/dc/elements/1.0/contributor</a>
Namespace:	dc.contributor.other
Label:	Other Contributor
Definition:	A person or organization not specified in a Creator element who has made significant intellectual contributions to the resource but whose contribution is secondary to any person or organization specified in a Creator element (for example, editor, transcriber, and illustrator).
Type of Term:	element

Date Issued:	1998-08-06
Decision:	Decision-1998-01
Version:	contributor-001
Example	Persons responsible for the contribution other than Author, Editor, Illustrator etc. Name of Person: LastName, FirstName

## 2.2 Coverage

Name of Term	Coverage
Fully Specified Namespace	dc.coverage
Term URI	<a href="http://purl.org/dc/elements/1.1/coverage">http://purl.org/dc/elements/1.1/coverage</a>
Label	Coverage
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	The extent or scope of the content of the resource
Source Comments	Coverage will typically include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN]) and that, where appropriate, named places or time periods be used in preference to numeric identifiers such as sets of coordinates or date ranges.
DC-Lib Comments	Use Coverage with qualifier Spatial or Temporal; use of unqualified Coverage is discouraged in

	qualified DC.
Type of term	Element
Refines	
Refined By	Spatial, Temporal
Has Encoding Scheme	See Source Comments above.
Obligation	O
Occurence	MIN=0, MAX=infinite
Example	Bengal, 1887-1964

### 2.2.1 Coverage- Temporal

Name of Term	Temporal
Fully Specified Namespace	dc.coverage.temporal
Term URI	<a href="http://purl.org/dc/terms/temporal">http://purl.org/dc/terms/temporal</a>
Label	Temporal
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	Temporal characteristics of the intellectual content of the resource.
DC-Lib Definition	
Source Comments	Coverage will typically include temporal period. Recommended best practice is to select a value from a controlled vocabulary.

DC-Lib Comments	The value of this element may also be included in Subject if desired. Prefer standard representation of date/time values in both DC.Date and dc.coverage.temporal, although textual descriptions may also be used.
Type of term	element refinement
Refines	Coverage
Refined By	
Has Encoding Scheme	DCMI Period - <a href="http://purl.org/dc/terms/Period">http://purl.org/dc/terms/Period</a> W3C-DTF - <a href="http://purl.org/dc/terms/W3CDTF">http://purl.org/dc/terms/W3CDTF</a>
Obligation	O
Occurence	MIN=0, MAX=infinite
Example	1887-1964

### 2.2.2 Coverage- Spatial

Name of Term	Spatial
Fully Specified Namespace	dc.coverage.spatial
Term URI	<a href="http://purl.org/dc/terms/spatial">http://purl.org/dc/terms/spatial</a>
Label	Spatial
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	Spatial characteristics of the intellectual content of the resource.

DC-Lib Definition	
Source Comments	Coverage will typically include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN]) and that, where appropriate, named places or time periods be used in preference to numeric identifiers such as sets of coordinates or date ranges.
DC-Lib Comments	Use this element for geographic coverage. The value of this element may also be included in Subject if desired.  There is a need to evaluate DCMI Box and DCMI Point as for their usefulness for libraries and how they relate to current library practices for recording cartographic data.
Type of term	element refinement
Refines	Coverage
Refined By	
Has Encoding Scheme	DCMI Point - <a href="http://purl.org/dc/terms/Point">http://purl.org/dc/terms/Point</a> ISO 3166 - <a href="http://purl.org/dc/terms/ISO3166">http://purl.org/dc/terms/ISO3166</a> DCMI Box - <a href="http://purl.org/dc/terms/Box">http://purl.org/dc/terms/Box</a> TGN - <a href="http://purl.org/dc/terms/TGN">http://purl.org/dc/terms/TGN</a> Use Library of Congress URI for MARC Geographic Area Codes, MARC Country Codes e.g.

	<a href="http://www.loc.gov/MARC.GAC">http://www.loc.gov/MARC.GAC</a>
Obligation	O
Occurence	MIN=0, MAX=infinite
Example -1	

### 2.3 Creator

Name of Term	Creator
Fully Specified Namespace	dc.creator
Term URI	<a href="http://purl.org/dc/elements/1.1/creator">http://purl.org/dc/elements/1.1/creator</a>
Label	Creator
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	An entity primarily responsible for making the content of the resource.
DC-Lib Definition	An entity with a primary role in the creation of the intellectual or artistic content of the resource.
Source Comments	Examples of a Creator include a person, an organisation, or a service. Typically, the name of a Creator should be used to indicate the entity.
DC-Lib Comments	This term should not be refined with a role. A subset of terms taken from the Library of Congress list of Relators have been approved as role refinements for Contributor ( <a href="http://www.loc.gov/marc/sourcecode/relator/relator">http://www.loc.gov/marc/sourcecode/relator/relator</a> )



	<p><a href="#">list.html</a>). URIs will be provided when available.</p> <p>The DCMI Usage Board has disapproved the idea of structured values to provide more information about the creator - it should be in a description for another resource.</p> <p>Creator and Contributor may be conflated with Creator being used as a refinement of Contributor.</p>
Type of term	Element
Refines	
Refined By	
Has Encoding Scheme	
Obligation	O
Occurrence	MIN=0, MAX=infinite
Example-1	LastName, First Name , e.g Nishes, Ashok

Note: Examples of a Creator includes a person, an organization

## 2.4 Date

Name of Term	Date
Fully Specified Namespace	dc.date
Term URI	<a href="http://purl.org/dc/elements/1.1/date">http://purl.org/dc/elements/1.1/date</a>
Label	Date
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>

Source Definition	A date associated with an event in the life cycle of the resource.
DC-Lib Definition	
Source Comments	Typically, date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [W3CDTF] and follows the YYYY-MM-DD format.
DC-Lib Comments	<p>Recommend use of an element refinement for type of Date. Recommend that dates be encoded:</p> <ol style="list-style-type: none"> <li>1) using W3C-DTF (a profile of ISO 8601 structured with hyphens),</li> <li>2) using ISO 8601 (structured without hyphens), or</li> <li>3) supplied as free text that does not take the form of a string of numerals (with or without hyphens).</li> </ol> <p>The second option, ISO 8601 (without hyphens), is preferred.</p> <p>It is acceptable to use widely-recognised practice such as day-month-year where the day and year are represented with numerals and month with a name or standard abbreviation (e.g., "1 January 2002" or "1 Jan 2002"). Avoid the use of potentially ambiguous date representations such as DD/MM/YY or MM/DD/YY (e.g., "04/05/05")</p> <p>It may be desirable to establish a DC-Lib encoding scheme or profile of ISO 8601 to cover B.C.E. dates, questionable and approximate dates. A date working group has been established to progress these issues.</p>

Type of term	Element
Refines	
Refined By	Created, Valid, Available, Issued, Modified
Has Encoding Scheme	ISO 8601(without hyphens) - <a href="http://purl.org/dc/terms/ISO8601">http://purl.org/dc/terms/ISO8601</a>  W3C-DTF (with hyphens) - <a href="http://purl.org/dc/terms/W3CDTF">http://purl.org/dc/terms/W3CDTF</a>
Obligation	O
Occurence	MIN=0, MAX=1
Example -1	YYYY-MM-DD format e.g. 2008-06-04

Note: Date should be like: YYYY-MM-DD format

#### 2.4.1 Accessioned

Name of Term	Accessioned
Fully Specified Namespace	dc.date.accessioned
Term URI	
Defined By	
Definition	Date of accessioned into the repository
Comments	
Type of term	
Has Encoding Scheme	
Obligation	MA - Automatic Input by the System
Occurrence	MIN=1, MAX=1
Example	YYYY-MM-DD format e.g. 2008-06-04

### 2.4.2 Available

Name of Term	Available
Fully Specified Namespace	dc.date.available
Term URI	
Defined By	
Definition	Date from which the item is available into the repository
Comments	
Type of term	
Has Encoding Scheme	
Obligation	
Occurrence	MIN=1, MAX=1
Example	YYYY-MM-DD format, e.g. 2008-06-04

### 2.4.3 Created

Name of Term	Created
Fully Specified Namespace	dc.date.created
Term URI	<a href="http://purl.org/dc/elements/1.1/date">http://purl.org/dc/elements/1.1/date</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	Date of creation or manufacture of intellectual content if different from date. Issued. Used for graduation date for theses/dissertations.
Comments	
Type of term	Element
Has Encoding Scheme	ISO 8601 - <a href="http://purl.org/dc/terms/ISO8601">http://purl.org/dc/terms/ISO8601</a> W3C-DTF - <a href="http://purl.org/dc/terms/W3CDTF">http://purl.org/dc/terms/W3CDTF</a>
Obligation	MA
Occurrence	This qualified element should not be repeated except when giving date created using more than

	one encoding scheme.
Example	YYYY-MM-DD format e.g 2008-06-04

#### 2.4.4 Issued

Name of Term	Issued
Fully Specified Namespace	dc.date.issued
Term URI	<a href="http://purl.org/dc/terms/issued">http://purl.org/dc/terms/issued</a>
Label	Issued
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	Date of formal issuance (e.g. publication) of the resource.
DC-Lib Comments	Use for the instantiation.
Type of term	element refinement
Refines	Date
Refined By	
Has Encoding Scheme	ISO 8601(without hyphens) - <a href="http://purl.org/dc/terms/ISO8601">http://purl.org/dc/terms/ISO8601</a>  W3C-DTF (with hyphens) - <a href="http://purl.org/dc/terms/W3CDTF">http://purl.org/dc/terms/W3CDTF</a>
Obligation	O
Occurence	MIN=1, MAX=1

Example	YYYY-MM-DD format e.g 2008-06-04
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#### 2.4.5 Submitted

Name of Term	Submitted
Fully Specified Namespace	dc.date.submitted
Term URI	
Defined By	
Definition	Date on which the item is submitted
Comments	
Type of term	
Has Encoding Scheme	
Obligation	MA
Occurrence	MIN=1, MAX=1
Example	YYYY-MM-DD format, e.g. 2008-06-04

#### 2.4.6 Updated

Name of Term	Updated
Fully Specified Namespace	dc.date.updated
Term URI	
Defined By	
Definition	Date on which the item is updated
Comments	
Type of term	
Has Encoding Scheme	
Obligation	MA
Occurrence	MIN=1, MAX=1

Example	YYYY-MM-DD format e.g. 2008-06-04
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### 2.4.7 Copyright

Name of Term	Copyright
Fully Specified Namespace	dc.date.copyright
Term URI	<a href="http://purl.org/dc/elements/1.1/date">http://purl.org/dc/elements/1.1/date</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	Date of copyright.
Comments	
Type of term	Element
Has Encoding Scheme	ISO 8601 - <a href="http://purl.org/dc/terms/ISO8601">http://purl.org/dc/terms/ISO8601</a> W3C-DTF - <a href="http://purl.org/dc/terms/W3CDTF">http://purl.org/dc/terms/W3CDTF</a>
Obligation	MA
Occurrence	MIN=1, MAX=1
Example	2002

Note: It is applicable for the case of copyrighted material.

### 2.5 Description

Name of Term	<b>Description</b>
Fully Specified Namespace	dc.description
Term URI	<a href="http://purl.org/dc/elements/1.1/description">http://purl.org/dc/elements/1.1/description</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	An account of the content of the resource.
Comments	Description may include but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content.
Type of term	Element
Has Encoding Scheme	
Obligation	R
Occurrence	MIN=0, MAX=3

Example	Trade in Bengal with the coming of Europeans from 15 <sup>th</sup> to 18 <sup>th</sup> Century.
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### 2.5.1 Abstract

Name of Term	<b>abstract</b>
Fully Specified Namespace	dc.description.abstract
Term URI	<a href="http://purl.org/dc/terms/abstract">http://purl.org/dc/terms/abstract</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	A summary of the resource.
Comments	Examples include summary of article, book etc.
Type of term	element
Has Encoding Scheme	
Obligation	R
Occurrence	MIN=0, MAX=1
Example	The video explains chronologically the coming of traders from European countries and their settlement in different areas of Bengal from 15 <sup>th</sup> to 18 <sup>th</sup> Century.

### 2.5.2 Sponsorship

Name of Term	<b>Sponsorship</b>
Fully Specified Namespace	dc.description.sponsorship
Term URI	
Defined By	
Definition	A Sponsorship for the resource.
Comments	
Type of term	
Has Encoding Scheme	
Obligation	R
Occurrence	MIN=0, MAX=infinite
Example	Funded by MHRD, Sponsored by TATA



### 2.5.3 Table of Contents

Name of Term	<b>TableOfContents</b>
Fully Specified Namespace	dc.description.tableofcontents
Term URI	<a href="http://purl.org/dc/terms/tableOfContents">http://purl.org/dc/terms/tableOfContents</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	A list of subunits of the content of the resource
Comments	
Type of term	element
Has Encoding Scheme	
Obligation	R
Occurrence	MIN=0, MAX=1
Example	See, annexure 2.5.3 example for table of content in chapter 7

### 2.5.4 URI

Name of Term	<b>URI</b>
Fully Specified Namespace	dc.description.uri
Term URI	
Defined By	
Definition	A list of URI of the content descriptions
Comments	
Type of term	
Has Encoding Scheme	
Obligation	R
Occurrence	MIN=0, MAX=infinite
Example	e.g <a href="http://www.loc.gov/">http://www.loc.gov/</a>

### 2.6 Format

Name of Term	<b>Format</b>
Fully Specified Namespace	dc.format

Term URI	<a href="http://purl.org/dc/elements/1.1/format">http://purl.org/dc/elements/1.1/format</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	The physical or digital manifestation of the resource.
Comments	Typically, Format may include the media-type or dimensions of the resource. Format may be used to determine the software, hardware or other equipment needed to display or operate the resource. Examples of dimensions include size and duration. Recommended best practice is to select a value from a controlled vocabulary
Type of term	element
Has Encoding Scheme	IMT - <a href="http://purl.org/dc/terms/IMT">http://purl.org/dc/terms/IMT</a> The Internet media type of the resource. <a href="http://www.isi.edu/innotes/iana/assignments/media-types/media-types">http://www.isi.edu/innotes/iana/assignments/media-types/media-types</a>
Obligation	MA
Occurrence	MIN=0, MAX=1
Example	YouTube Video

### 2.6.1 Extent

Name of Term	<b>extent</b>
Fully Specified Namespace	dc.format.extent
Term URI	<a href="http://purl.org/dc/elements/1.1/format">http://purl.org/dc/elements/1.1/format</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	Size, duration or number of pages of a file associated with an item.
Comments	This metadata field will be used to specify size. The duration information applicable to audio and video type recourses. This duration is not to be confused with 'typicalLearningTime' in educational metadata category.

Type of term	element
Has Encoding Scheme	IMT - <a href="http://purl.org/dc/terms/IMT">http://purl.org/dc/terms/IMT</a> The Internet media type of the resource. See also: <a href="http://www.isi.edu/in-notes/iana/assignments/media-types/media-types">http://www.isi.edu/in-notes/iana/assignments/media-types/media-types</a>
Obligation	O
Occurrence	MIN=0, MAX=1
Example	<b>18:15 (duration of the video)</b>

**Explanation (Format-Extent):** In format (extent) metadata field you may include the media-type or dimensions of the resource. Format may be used to determine the software, hardware or other equipment needed to display or operate the resource. Examples of dimensions include size and duration.

### 2.6.2 Mimetype

Name of Term	<b>Mime Type</b>
Fully Specified Namespace	dc.format.mimetype
Term URI	<a href="http://purl.org/dc/elements/1.1/format">http://purl.org/dc/elements/1.1/format</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	MIME type associated with a file contained in the item. Information regarding the format of a file contained in the item.
Comments	
Type of term	element
Has Encoding Scheme	IMT - <a href="http://purl.org/dc/terms/IMT">http://purl.org/dc/terms/IMT</a> The Internet media type of the resource. See also: <a href="http://www.isi.edu/in-notes/iana/assignments/media-types/media-types">http://www.isi.edu/in-notes/iana/assignments/media-types/media-types</a>
Obligation	MA

Occurrence	MIN=0, MAX=1
Example	See, annexure 2.6.2 :Vocabulary for MimeType given in Chapter 7

## 2.7 Identifier

Name of Term	<b>identifier</b>
Fully Specified Namespace	dc.identifier
Term URI	<a href="http://purl.org/dc/elements/1.1/identifier">http://purl.org/dc/elements/1.1/identifier</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	An unambiguous reference to the resource within a given context.
Comments	Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system. Examples of formal identification systems include the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN).
Type of term	element
Has Encoding Scheme	URI - <a href="http://purl.org/dc/terms/URI">http://purl.org/dc/terms/URI</a> If not expressed by URI - SICI (Serial Item and Contribution Identifier), ISBN (International Standard Book Number), ISSN (International Standard Serial Number), DOI (Digital Object Identifier). To be registered as encoding schemes, URIs will be provided when available.
Obligation	M
Occurrence	MIN=1, MAX=1
Example	<a href="https://www.youtube.com/watch?v=tpfxetzv8c">https://www.youtube.com/watch?v=tpfxetzv8c</a>

**Explanation (Identifier):** Identifier is an unambiguous reference to the resource within a given context. You can identify the resource by means of a string or number conforming to a formal identification system. Examples of formal identification systems include the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN). In this case the YouTube Video URL has been used.

### 2.7.1 ISBN

Name of Term	<b>ISBN</b>
Fully Specified Namespace	dc.identifier.isbn
Term URI	<a href="http://purl.org/dc/elements/1.1/identifier">http://purl.org/dc/elements/1.1/identifier</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	International Standard Book Number/ International Standard Serial Number/URI
Comments	
Type of term	element
Has Encoding Scheme	
Obligation	MA
Occurrence	MIN=1, MAX=1
Example	Not Applicable for a video.

**Explanation (ISBN):** The International Standard Book Number (ISBN) *is a unique numeric commercial book identifier*. The 10-digit ISBN format was developed by the International Organization for Standardization (ISO) and was published in 1970 as international standard ISO 2108. The ISBN is 13 digits long if assigned on or after 1 January 2007. Ex: 978-3-16-148410-0. It is not applicable for video resources.

### 2.7.2 ISSN

Name of Term	<b>ISSN</b>
Fully Specified Namespace	dc.identifier.issn
Term URI	<a href="http://purl.org/dc/elements/1.1/identifier">http://purl.org/dc/elements/1.1/identifier</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	International Standard Book Number/ International Standard Serial Number/URI
Comments	
Type of term	element
Has Encoding Scheme	
Obligation	MA
Occurrence	MIN=1, MAX=1

Example	Not Applicable for a video programme.
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Note: Normally, ISSN is applicable for journal /serial.

### 2.7.3 URI

Name of Term	<b>URI</b>
Fully Specified Namespace	dc.identifier.uri
Term URI	<a href="http://purl.org/dc/elements/1.1/identifier">http://purl.org/dc/elements/1.1/identifier</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	International Standard Book Number/ International Standard Serial Number/URI
Comments	
Type of term	element
Has Encoding Scheme	
Obligation	MA
Occurrence	MIN=1, MAX=1
Example	e.g <a href="http://www.loc.gov">http://www.loc.gov</a>

**Explanation (URI):** A **uniform resource identifier (URI)** is a string of characters used to identify a name of a resource. The most common form of URI is the uniform resource locator (URL).

### 2.7.4 Citation

Name of Term	<b>Citation</b>
Fully Specified Namespace	dc.identifier.citation
Term URI	<a href="http://purl.org/dc/terms/bibliographicCitation">http://purl.org/dc/terms/bibliographicCitation</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	A bibliographic citation of the resource.
Comments	<a href="http://dublincore.org/documents/dc-citation-guidelines/">http://dublincore.org/documents/dc-citation-guidelines/</a>
Type of term	element
Has Encoding Scheme	

Obligation	R
Occurrence	MIN=0, MAX=1
Example	Not Applicable for a video programme.

### 2.7.5 Other

Name of Term	<b>Other</b>
Fully Specified Namespace	dc.identifier.other
Term URI	
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	Other Identifier for the resource
Comments	
Type of term	element
Has Encoding Scheme	
Obligation	O
Occurrence	MIN=0, MAX=1
Example	Except the above list of identifiers like ISBN, ISSN, URI and Citation.

### 2.8 Language

Name of Term	<b>Language</b>
Fully Specified Namespace	dc.language.iso
Term URI	<a href="http://purl.org/dc/elements/1.1/language">http://purl.org/dc/elements/1.1/language</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	A language of the intellectual content of the resource.
Comments	Recommended best practice is to ISO 639 [ISO639], defines two- and three-letter primary language tags with optional subtags. Examples include "en" or "eng" for English, "akk" for Akkadian, and "en-GB" for English used in the United Kingdom

Type of term	element
Has Encoding Scheme	ISO693-2. Mapping is available at <a href="http://lcweb.loc.gov/standards/iso639-2/englangn.html">http://lcweb.loc.gov/standards/iso639-2/englangn.html</a> .
Obligation	MA
Occurrence	MIN=0, MAX=1
Example	en (English)

**Explanation:** All recognized Indian languages are covered in Annexure 2.8 in Chapter 7.

## 2.9 Publisher

Name of Term	Publisher
Fully Specified Namespace	dc.publisher
Term URI	<a href="http://purl.org/dc/elements/1.1/publisher">http://purl.org/dc/elements/1.1/publisher</a>
Label	Publisher
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	An entity responsible for making the resource available.
DC-Lib Definition	
Source Comments	Examples of a Publisher include a person, an organisation, or a service. Typically, the name of a Publisher should be used to indicate the entity.
DC-Lib Comments	A subset of terms taken from the Library of Congress list of Relators has been approved



	for use as role refinements of Publisher if applicable ( <a href="http://www.loc.gov/marc/sourcecode/relator/relatorlist.html">http://www.loc.gov/marc/sourcecode/relator/relatorlist.html</a> ). URIs will be provided when available. The DCMI Usage Board has disapproved the idea of structured values to provide more information about the publisher - it should be in a description for another resource.
Type of term	element
Refines	
Refined By	
Has Encoding Scheme	Role list ( <a href="http://www.loc.gov/">http://www.loc.gov/...</a> )
Obligation	O
Occurrence	MIN=0, MAX=1
<b>Example</b>	IGNOU

## 2.10 Relation

Name of Term	<b>relation</b>
Fully Specified Namespace	dc.relation
Term URI	<a href="http://purl.org/dc/elements/1.1/source">http://purl.org/dc/elements/1.1/source</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	This is used to link this resource to related resources
Comments	
Type of term	element

Has Encoding Scheme	NIL
Obligation	O
Occurrence	MIN=0, MAX=infinite
Example	<a href="https://www.youtube.com/watch?v=tpfxetzbv8">https://www.youtube.com/watch?v=tpfxetzbv8</a>

### 2.10.1 IsReferencedBy

Name of Term	<b>isReferencedBy</b>
Fully Specified Namespace	dc.relation.isreferencedby
Term URI	<a href="http://purl.org/dc/terms/isReferencedBy">http://purl.org/dc/terms/isReferencedBy</a>
Label	Is Referenced By
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	The described resource is referenced, cited, or otherwise pointed to by the referenced resource.
DC-Lib Definition	
Source Comments	
DC-Lib Comments	May be of limited use in terms of later resources referencing the initial resource, but may be useful to link to a major review or assessing essay.
Type of term	element refinement
Refines	Relation
Refined By	
Has Encoding Scheme	URI - <a href="http://purl.org/dc/terms/URI">http://purl.org/dc/terms/URI</a> If not expressed by URI - <u>SICI</u> (Serial Item and Contribution Identifier), <u>ISBN</u> (International Standard Book Number), <u>ISSN</u> (International Standard Serial Number), <u>DOI</u> (Digital Object Identifier). To be registered as encoding schemes (these may also be expressed as URIs).

	<a href="http://dublincore.org/usage/terms/dc/current-schemes/">http://dublincore.org/usage/terms/dc/current-schemes/</a>
Obligation	O
Occurrence	MIN=0, MAX=infinite
Example	<a href="https://www.youtube.com/user/ignouoss/videos">https://www.youtube.com/user/ignouoss/videos</a> (part of video collection under School of Social Sciences of IGNOU channel on YouTube)

**Explanation (isReferencedBy):** If the resource document X is being hyperlinked or inlinked by document Y, URL of document Y may be mentioned here. For instance a pdf file may have links to reading lists, video resources etc.

### 2.10.2 Is Part Of

Name of Term	<b>isPartOf</b>
Fully Specified Namespace	dc.relation.ispartof
Term URI	<a href="http://purl.org/dc/terms/isPartOf">http://purl.org/dc/terms/isPartOf</a>
Label	Is Part Of
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	The described resource is a physical or logical part of the referenced resource.
DC-Lib Definition	
Source Comments	
DC-Lib Comments	Recommended use when documents in hand are parts of "host documents" (e.g. journal, monographic series) and when there is no citation information in DC identifier (if used by Citation WG).
Type of term	element refinement
Refines	Relation

Refined By	
Has Encoding Scheme	<p>URI - <a href="http://purl.org/dc/terms/URI">http://purl.org/dc/terms/URI</a></p> <p>If not expressed by URI - <u>SICI</u> (Serial Item and Contribution Identifier), <u>ISBN</u> (International Standard Book Number), <u>ISSN</u> (International Standard Serial Number), <u>DOI</u> (Digital Object Identifier). To be registered as encoding schemes (these may also be expressed as URIs). <a href="http://dublincore.org/usage/terms/dc/current-schemes/">http://dublincore.org/usage/terms/dc/current-schemes/</a></p>
Obligation	O
Occurence	MIN=0, MAX=infinite
Example	<a href="https://www.youtube.com/user/ignousoss/videos">https://www.youtube.com/user/ignousoss/videos</a> (part of video collection under School of Social Sciences of IGNOU channel on YouTube)

### 2.10.3 Requires

Name of Term	Requires
Fully Specified Namespace	dc.relation.requires
Term URI	<a href="http://purl.org/dc/terms/requires">http://purl.org/dc/terms/requires</a>
Label	Requires
Defined By	<a href="http://dublincore.org/documents/demi-terms/">http://dublincore.org/documents/demi-terms/</a>
Source Definition	The described resource requires the referenced resource to support its function, delivery, or coherence of content.
DC-Lib Definition	
Source Comments	
DC-Lib Comments	
Type of term	element refinement

Refines	Relation
Refined By	
Has Encoding Scheme	URI - <a href="http://purl.org/dc/terms/URI">http://purl.org/dc/terms/URI</a> If not expressed by URI - <u>SICI</u> (Serial Item and Contribution Identifier), <u>ISBN</u> (International Standard Book Number), <u>ISSN</u> (International Standard Serial Number), <u>DOI</u> (Digital Object Identifier). To be registered as encoding schemes (these may also be expressed as URIs). <a href="http://dublincore.org/usage/terms/dc/current-schemes/">http://dublincore.org/usage/terms/dc/current-schemes/</a>
Obligation	O
Occurence	MIN=0, MAX=infinite
Example	HTML5 player

**Explanation (Requires):**The described resource requires the referenced resource to support its function, delivery, or coherence of content. A song/ music cannot be listened without music player or required software. Therefore, this metadata field may be applicable to such kind of resources.

#### 2.10.4 Has Part

Name of Term	hasPart
Fully Specified Namespace	dc.relation.haspart
Term URI	<a href="http://purl.org/dc/terms/hasPart">http://purl.org/dc/terms/hasPart</a>
Label	Has Part
Defined By	<a href="http://dublincore.org/documents/demi-terms/">http://dublincore.org/documents/demi-terms/</a>
Source Definition	The described resource includes the referenced resource either physically or logically.
DC-Lib Definition	
Source Comments	

DC-Lib Comments	
Type of term	element refinement
Refines	Relation
Refined By	
Has Encoding Scheme	<p>URI - <a href="http://purl.org/dc/terms/URI">http://purl.org/dc/terms/URI</a></p> <p>If not expressed by URI - <u>SICI</u> (Serial Item and Contribution Identifier), <u>ISBN</u> (International Standard Book Number), <u>ISSN</u> (International Standard Serial Number), <u>DOI</u> (Digital Object Identifier). To be registered as encoding schemes (these may also be expressed as URIs).</p> <p><a href="http://dublincore.org/usage/terms/dc/current-schemes/">http://dublincore.org/usage/terms/dc/current-schemes/</a></p>
Obligation	O
Occurrence	MIN=0, MAX=infinite
Example-1	French trade Area in Bengal

**Explanation (Has Part):** You will fill up this field,. In this metadata field, you have to write all the chapters' name (without page number) of that particular book. This field is **not applicable** when you create metadata of **chapter part** of a particular document.

**Example:** If a book of Psychology has three (3) chapters- Chapter 1: Variation in Psychological Attributes, Chapter 2: Self and Personality, Chapter 3: Meeting Life Challenges then you have to write this way: Chapter---Give a space----Chapter Number-----Give a colon mark----Write the name of chapter-----Give a semi colon mark

**Relation Has Part:**

If the book has five chapters, specify chapter titles seperated by semicolon

Chapter 1: Variations in Psychological Attributes; Chapter 2: Self and Personality; Chapter 3:

### 2.10.5 Is Part of Series

Name of Term	<b>Is Part of Series</b>
Fully Specified Namespace	dc.relation.ispartofseries
Term URI	
Label	<b>Is Part of Series</b>
Defined By	
Source Definition	The described resource is part of the series resource either physically or logically.
DC-Lib Definition	
Source Comments	
DC-Lib Comments	
Type of term	
Refines	
Refined By	
Has Encoding Scheme	
Obligation	O
Occurence	MIN=0, MAX=infinite
Example	

### 2.10.6 References

Name of Term	references
Fully Specified Namespace	dc.relation.references
Term URI	<a href="http://purl.org/dc/terms/references">http://purl.org/dc/terms/references</a>
Label	References

Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	The described resource references, cites, or otherwise points to the referenced resource.
DC-Lib Definition	
Source Comments	
DC-Lib Comments	May be of limited use except for other resources that are far reaching or thorough criticisms. Not appropriate, for example, to include all references from the bibliography of the described resource in repeated Relation. References tags
Type of term	element refinement
Refines	Relation
Refined By	
Has Encoding Scheme	URI - <a href="http://purl.org/dc/terms/URI">http://purl.org/dc/terms/URI</a> If not expressed by URI - <u>SICI</u> (Serial Item and Contribution Identifier), <u>ISBN</u> (International Standard Book Number), <u>ISSN</u> (International Standard Serial Number), <u>DOI</u> (Digital Object Identifier). To be registered as encoding schemes (these may also be expressed as URIs). <a href="http://dublincore.org/usage/terms/dc/current-schemes/">http://dublincore.org/usage/terms/dc/current-schemes/</a>
Obligation	O
Occurrence	MIN=0, MAX=infinite
Example	NA

## 2.11 Rights

Name of Term	rights
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Fully Specified Namespace	dc.rights
Term URI	<a href="http://purl.org/dc/elements/1.1/rights">http://purl.org/dc/elements/1.1/rights</a>
Label	Rights
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	Information about rights held in and over the resource.
DC-Lib Definition	
Source Comments	Typically, a Rights element will contain a rights management statement for the resource, or reference a service providing such information. Rights information often encompasses Intellectual Property Rights (IPR), Copyright, and various Property Rights. If the Rights element is absent, no assumptions can be made about the status of these and other rights with respect to the resource.
DC-Lib Comments	Need to determine how to use for library applications; there is ongoing discussion on rights metadata in various applications.
Type of term	element
Refines	
Refined By	
Has Encoding Scheme	URI - <a href="http://purl.org/dc/terms/URI">http://purl.org/dc/terms/URI</a>
Obligation	R if applicable (if there are encumbrances)

Occurrence	MIN=0, MAX=1
Example	© IGNOU

### 2.11.1 Holder

Name of Term	Holder
Fully Specified Namespace	dc.rights.holder
Term URI	
Label	Rights Holder
Defined By	
Source Definition	Information about rights holder held in and over the resource.
DC-Lib Definition	
Source Comments	
DC-Lib Comments	
Type of term	
Refines	
Refined By	
Has Encoding Scheme	
Obligation	O
Occurrence	MIN=0, MAX=1

Example	
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### 2.11.2 License

Name of Term	License
Fully Specified Namespace	dc.rights.license
Term URI	
Label	Rights License
Defined By	
Source Definition	Information about rights license held in and over the resource.
DC-Lib Definition	
Source Comments	
DC-Lib Comments	
Type of term	
Refines	
Refined By	
Has Encoding Scheme	
Obligation	O
Occurence	MIN=0, MAX=1
Example	

## 2.12 Source

Name of Term	<b>Source</b>
Fully Specified Namespace	dc.source
Term URI	<a href="http://purl.org/dc/elements/1.1/source">http://purl.org/dc/elements/1.1/source</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	An organization from which this resource has been harvested.
Comments	Value for this field is picked up from a list of institutions.
Type of term	element
Has Encoding Scheme	NIL
Obligation	O
Occurrence	MIN=0, MAX=1
Example-1	Internet, Khan Academy or Book Name – Publisher Name

### 2.12.1 URI

Name of Term	<b>URI</b>
Fully Specified Namespace	dc.source.uri
Term URI	<a href="http://purl.org/dc/elements/1.1/source">http://purl.org/dc/elements/1.1/source</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	An organization from which this resource has been harvested.
Comments	Value for this field is picked up from a list of institutions.
Type of term	element
Has Encoding Scheme	NIL
Obligation	O
Occurrence	MIN=0, MAX=1

Example-1	<b>www.youtube.com</b>
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### 2.13 Subject

Name of Term	<b>Subject</b>
Fully Specified Namespace	dc.subject
Term URI	<a href="http://purl.org/dc/elements/1.1/subject">http://purl.org/dc/elements/1.1/subject</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	The topic of the content of the resource.
Comments	Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme. A subject entry will be used for specifying free keywords whereas another will be specified using a classification scheme.
Type of term	element
Has Encoding Scheme	<b>Library of Congress Subject Headings -</b> <a href="http://purl.org/dc/terms/LCSH">http://purl.org/dc/terms/LCSH</a> Medical Subject Headings - <a href="http://purl.org/dc/terms/MESH">http://purl.org/dc/terms/MESH</a> <b>Dewey Decimal Classification -</b> <a href="http://purl.org/dc/terms/DDC">http://purl.org/dc/terms/DDC</a> <b>Library of Congress Classification -</b> <a href="http://purl.org/dc/terms/LCC">http://purl.org/dc/terms/LCC</a> <b>Universal Dewey Classification -</b> <a href="http://purl.org/dc/terms/UDC">http://purl.org/dc/terms/UDC</a>
Obligation	MA
Occurrence	MIN=0, MAX=infinite

Example	History, India; Foreign Trade, India
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**Explanation (Subject):** Standard subject heading list is to be used. Library of Congress Subject Heading List is to be used.

### 2.13.1 DDC

Name of Term	<b>DDC</b>
Fully Specified Namespace	dc.subject.ddc
Term URI	<a href="http://purl.org/dc/elements/1.1/subject">http://purl.org/dc/elements/1.1/subject</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	The topic of the content of the resource.
Comments	Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme. A subject entry will be used for specifying free keywords whereas another will be specified using a classification scheme.
Type of term	element
Has Encoding Scheme	Dewey Decimal Classification - <a href="http://purl.org/dc/terms/DDC">http://purl.org/dc/terms/DDC</a>
Obligation	MA
Occurrence	MIN=0, MAX=inifinite
Example	History, India; Foreign Trade, India

### 2.13.2 LCC

Name of Term	<b>LCC</b>
Fully Specified Namespace	dc.subject.lcc

Term URI	<a href="http://purl.org/dc/elements/1.1/subject">http://purl.org/dc/elements/1.1/subject</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	The topic of the content of the resource.
Comments	Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme. A subject entry will be used for specifying free keywords whereas another will be specified using a classification scheme.
Type of term	element
Has Encoding Scheme	Library of Congress Classification - <a href="http://purl.org/dc/terms/LCC">http://purl.org/dc/terms/LCC</a>
Obligation	MA
Occurrence	MIN=0, MAX=inifinite
Example	History, India; Foreign Trade, India

### 2.13.3 LCSH

Name of Term	<b>LCSH</b>
Fully Specified Namespace	dc.subject.lcsh
Term URI	<a href="http://purl.org/dc/elements/1.1/subject">http://purl.org/dc/elements/1.1/subject</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	The topic of the content of the resource.
Comments	Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a

	value from a controlled vocabulary or formal classification scheme. A subject entry will be used for specifying free keywords whereas another will be specified using a classification scheme.
Type of term	element
Has Encoding Scheme	Library of Congress Subject Headings - <a href="http://purl.org/dc/terms/LCSH">http://purl.org/dc/terms/LCSH</a>
Obligation	MA
Occurrence	MIN=0, MAX=inifinite
Example	History, India; Foreign Trade, India

#### 2.13.4 MESH

Name of Term	<b>MESH</b>
Fully Specified Namespace	dc.subject.mesh
Term URI	<a href="http://purl.org/dc/elements/1.1/subject">http://purl.org/dc/elements/1.1/subject</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	The topic of the content of the resource.
Comments	Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme. A subject entry will be used for specifying free keywords whereas another will be specified using a classification scheme.
Type of term	element
Has Encoding Scheme	Medical Subject Headings - <a href="http://purl.org/dc/terms/MESH">http://purl.org/dc/terms/MESH</a>



Obligation	MA
Occurrence	MIN=0, MAX=inifinite
Example	History, India; Foreign Trade, India

### 2.13.5 Other

Name of Term	<b>Other</b>
Fully Specified Namespace	dc.subject.other
Term URI	<a href="http://purl.org/dc/elements/1.1/subject">http://purl.org/dc/elements/1.1/subject</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	The topic of the content of the resource.
Comments	Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme. A subject entry will be used for specifying free keywords whereas another will be specified using a classification scheme.
Type of term	element
Has Encoding Scheme	Colon Classification (CC) developed by S.R. Ranganathan.
Obligation	MA
Occurrence	MIN=0, MAX=inifinite
Example	

### 2.14 Title

Name of Term	<b>Title</b>
Fully Specified Namespace	dc.title
Term URI	<a href="http://purl.org/dc/elements/1.1/title">http://purl.org/dc/elements/1.1/title</a>

Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	A name given to the resource
Comments	Typically, a title will be a name by which the resource is formally known.
Type of term	Element
Has Encoding Scheme	No
Obligation	MA
Occurrence	MIN=1, MAX=1
Example	Coming of European Bengal

**Explanation:** In this metadata field, please write the title of the document. The document may be a book or a chapter of a book, a video or any other multimedia object.

#### 2.14.1 Alternative Title

Name of Term	<b>alternative</b>
Fully Specified Namespace	dc.title.alternative
Term URI	<a href="http://purl.org/dc/terms/alternative">http://purl.org/dc/terms/alternative</a>
Label	Alternative
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Source Definition	Any form of the title used as a substitute or alternative to the formal title of the resource.
Source Comments	This qualifier can include Title abbreviations as well as translations.

DC-Lib Comments	Assigned title such as uniform or key title is Alternative. Best practice is to use this element refinement for titles other than the main title. Retain initial articles and use local sorting algorithms based on language. A language qualifier may be used to indicate language of title if appropriate. (For example, see: Initial Definite and Indefinite Articles for a list of articles in various languages)
Type of term	element refinement
Has Encoding Scheme	
Obligation	<b>R</b>
Occurrence	MIN=1, MAX=1
Example	Trade: Coming of European in Bengal

**Explanation (Alternative Title):** Any form of the title used as a substitute or alternative to the formal title of the resource.

### 2.15 Type

Name of Term	<b>type</b>
Fully Specified Namespace	dc.type
Term URI	<a href="http://purl.org/dc/elements/1.1/type">http://purl.org/dc/elements/1.1/type</a>
Defined By	<a href="http://dublincore.org/documents/dcmi-terms/">http://dublincore.org/documents/dcmi-terms/</a>
Definition	The nature or genre of the content of the resource.
Comments	Type includes terms describing general

	<p>categories, functions, genres, or aggregation levels for content.</p> <p>Recommended best practice is to select a value from a controlled vocabulary (for example, the list of DCMI Types). This is not to be confused with 'learningMaterialType' which is used to specify pedagogic type.</p>
Type of term	element
Has Encoding Scheme	<p>Recommended that at least one value from DCMI-Type (Collection, Dataset, Event, Image, InteractiveResource, MovingImage, PhysicalObject, Service, Software, Sound, StillImage, or Text) be supplied.</p>
Obligation	M
Occurrence	MIN=0, MAX=1
Example	<p>Moving image (documentary)</p> <p>See, annexure 2.15: vocabulary for type</p>

### References

1. **Library Application Profile Generic Metadata**. Retrieved dated August 06, 2015 from <http://dublincore.org/documents/2004/09/10/library-application-profile/>

## Chapter 3 Educational Metadata

### 3.0 Application Profile for Educational Metadata

This document is an up-to-date draft specification in RDF of the LRMI 1.1 metadata terms maintained by the Dublin Core Metadata Initiative. In the following term tables, each term is specified with the following minimal set of attributes:

Name:	A token appended to the URI of the LRMI namespace to create the URI of the term.
Label:	The human-readable label assigned to the term.
URI:	The Uniform Resource Identifier used to uniquely identify a term.
Definition:	A statement that represents the concept and essential nature of the term.
Type of Term:	The type of term—class or property.
Date Issued/Modified:	The date the term was created or modified.

Where applicable, the following attributes provide additional information about a term:

Description:	Additional information about the term or its application.
Sub property Of:	A property of which the described term is a subproperty.
Equivalent Property:	A property to which the described term is equivalent ( <code>owl:equivalentProperty</code> ).
Subclass Of:	A class of which the described term is a subclass.
Equivalent Class:	A class to which the described term is equivalent

	( <a href="#">owl:equivalentClass</a> ).
Has Domain:	Any resource that has a given property is [inferred to be] an instance of one or more classes ( <a href="#">rdfs:domain</a> ).
Has Range:	The values of a property are [inferred to be] instances of one or more classes. ( <a href="#">rdfs:range</a> )
Domain Includes:	Relates a property to a class that is (one of) the type(s) the property is expected to be used on. ( <a href="https://schema.org/domainIncludes">https://schema.org/domainIncludes</a> ).
Range Includes:	Relates a property to a class that constitutes (one of) the expected type(s) for values of the property. ( <a href="https://schema.org/rangeIncludes">https://schema.org/rangeIncludes</a> ).
Usage Note:	A reference to a resource that provides information on how this resource is to be used. ( <a href="http://purl.org/vocab/vann/usageNote">http://purl.org/vocab/vann/usageNote</a> ).
Name:	alignmentType
Label:	Alignment Type
URI:	<a href="http://purl.org/dcx/lrmi-terms/alignmentType">http://purl.org/dcx/lrmi-terms/alignmentType</a>
Definition:	A category of alignment between the learning resource and the framework node.
Description:	Recommended values include: 'assesses', 'teaches', 'requires', 'textComplexity', 'readingLevel', 'educationalSubject', and 'educationLevel'.
Type of Term:	rdf:Property
Domain Includes:	<a href="http://purl.org/dcx/lrmi-terms/AlignmentObject">http://purl.org/dcx/lrmi-terms/AlignmentObject</a> <a href="http://schema.org/AlignmentObject">http://schema.org/AlignmentObject</a>
Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#string">http://www.w3.org/2001/XMLSchema#string</a>
Equivalent Property:	<a href="http://schema.org/alignmentType">http://schema.org/alignmentType</a>
Is Defined By:	<a href="http://purl.org/dcx/lrmi-terms/">http://purl.org/dcx/lrmi-terms/</a>
Date Issued:	2015-01-12

### 3.1 Educational Alignment

### 3.1.1 Educational Alignment: alignmentType

Name:	alignmentType
Label:	Alignment Type
URI:	<a href="http://purl.org/dcx/lrmi-terms/alignmentType">http://purl.org/dcx/lrmi-terms/alignmentType</a>
Definition:	A category of alignment between the learning resource and the framework node.
Description:	Recommended values include: 'assesses', 'teaches', 'requires', 'textComplexity', 'readingLevel', 'educationalSubject', and 'educationLevel'.
Type of Term:	lrmi.educationalAlignment.alignmentType
Domain Includes:	<a href="http://purl.org/dcx/lrmi-terms/AlignmentObject">http://purl.org/dcx/lrmi-terms/AlignmentObject</a> <a href="http://schema.org/AlignmentObject">http://schema.org/AlignmentObject</a>
Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#string">http://www.w3.org/2001/XMLSchema#string</a>
Equivalent Property:	<a href="http://schema.org/alignmentType">http://schema.org/alignmentType</a>
Is Defined By:	<a href="http://purl.org/dcx/lrmi-terms/">http://purl.org/dcx/lrmi-terms/</a>
Date Issued:	2015-01-12
Authority list	Ref. annexure 3.1.1 : Vocabulary for Alignment type

### 3.1.2 educationalFramework

Name:	educationalFramework
Label:	EducationalFramework
URI:	
Definition:	Name of educational bodies to which the resource is aligned to.
Type of Term:	lrmi.educationalAlignment.educationalFramework

Domain Includes:	
Range Includes:	
Equivalent Property:	
Is Defined By:	Name of educational bodies to which the resource is aligned to
Date Issued:	
Authority list	See, annexure 3.1.2: Vocabulary for Educational Framework

### 3.1.3 educationalLevel

Name:	educationalLevel
Label:	Educational Level
URI:	
Definition:	Grade level to which the resource is aligned to.
Type of Term:	lrmi.educationalAlignment.educationalLevel
Domain Includes:	
Range Includes:	
Equivalent Property:	
Is Defined By:	Grade level to which the resource is aligned to
Date Issued:	
Authority list	See, annexure 3.1.3: Vocabulary for Educational Level



### 3.1.4 pedagogicObjective

Name:	pedagogicObjective
Label:	PedagogicObjective
URI:	
Definition:	Educational pedagogicobjective of the resource.
Type of Term:	lrmi.educationalAlignment.pedagogicObjective
Domain Includes:	
Range Includes:	
Equivalent Property:	
Is Defined By:	educational objective of the resource
Date Issued:	
Authority list	Free Text

### 3.2 educationalRole

Name	educationalRole
Label	Educational Role
URI:	<a href="http://purl.org/dcx/lrmi-terms/educationalRole">http://purl.org/dcx/lrmi-terms/educationalRole</a>
Definition:	The role that describes the target audience of the content.Ex: “student” or “teacher”
Description:	[The educational function assumed or part played by the group for whom the resource is intended.]
Type of Term:	lrmi.educationalRole

Domain Includes:	<a href="http://purl.org/dcx/lrmi-terms/EducationalAudience">http://purl.org/dcx/lrmi-terms/EducationalAudience</a> <a href="http://schema.org/EducationalAudience">http://schema.org/EducationalAudience</a>
Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#string">http://www.w3.org/2001/XMLSchema#string</a>
Equivalent Property:	<a href="http://schema.org/educationalRole">http://schema.org/educationalRole</a>
Is Defined By:	<a href="http://purl.org/dcx/lrmi-terms/">http://purl.org/dcx/lrmi-terms/</a>
Date Issued:	2015-01-12
Authority list	See, annexure 3.2: Vocabulary for Educational Role

### 3.3 educationalUse

Name	educationalUse
Label:	Educational Use
URI:	<a href="http://purl.org/dcx/lrmi-terms/educationalUse">http://purl.org/dcx/lrmi-terms/educationalUse</a>
Definition:	The purpose of a work in the context of education.
Description:	For example, 'assignment', 'group work'.
Type of Term:	lrmi.educationalUse
Domain Includes:	<a href="http://schema.org/CreativeWork">http://schema.org/CreativeWork</a>
Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#string">http://www.w3.org/2001/XMLSchema#string</a>
Equivalent Property:	<a href="http://schema.org/educationalUse">http://schema.org/educationalUse</a>
Is Defined By:	<a href="http://purl.org/dcx/lrmi-terms/">http://purl.org/dcx/lrmi-terms/</a>
Date Issued:	2015-01-12
Authority list	See, annexure 3.3: Vocabulary for Educational Use

### 3.4 interactivityType

Name	interactivityType
Label	Interactivity Type
URI:	<a href="http://purl.org/dcx/lrmi-terms/interactivityType">http://purl.org/dcx/lrmi-terms/interactivityType</a>
Label:	Interactivity Type
Definition:	The predominant mode of learning supported by the learning resource.
Description:	Acceptable values are 'active', 'expositive', or 'mixed'.
Description:	Based on, and mappable from, IEEE LOM 5.1: Interactivity Type.
Type of Term:	lrmi.interactivityType
Domain Includes:	<a href="http://schema.org/CreativeWork">http://schema.org/CreativeWork</a>
Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#string">http://www.w3.org/2001/XMLSchema#string</a>
Equivalent Property:	<a href="http://schema.org/interactivityType">http://schema.org/interactivityType</a>
Is Defined By:	<a href="http://purl.org/dcx/lrmi-terms/">http://purl.org/dcx/lrmi-terms/</a>
Date Issued:	2015-01-12
Authority list	See, Annexure 3.4: Vocabulary for Interactivity Type

Note that Active, Expositive, and Mixed are attributes of the resource, rather than "modes of learning"

- **Active:** Existing in action, working, effective, having practical operation or results.
- **Expositive :**Tending to set forth or describe in detail; descriptive; serving to explain
- **Mixed:** Consisting of different or dissimilar elements or qualities; not of one kind, not pure or simple; composite

### 3.5 learningResourceType

Name	learningResourceType
Label	Learning Resource Type
URI:	<a href="http://purl.org/dcx/lrmi-terms/learningResourceType">http://purl.org/dcx/lrmi-terms/learningResourceType</a>
Definition:	The predominant type or kind characterizing the learning resource.
Description:	For example, 'presentation', 'handout'.
Type of Term:	lrmi.learningResourceType
Domain Includes:	<a href="http://schema.org/CreativeWork">http://schema.org/CreativeWork</a>
Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#string">http://www.w3.org/2001/XMLSchema#string</a>
Equivalent Property:	<a href="http://schema.org/learningResourceType">http://schema.org/learningResourceType</a>
Is Defined By:	<a href="http://purl.org/dcx/lrmi-terms/">http://purl.org/dcx/lrmi-terms/</a>
Date Issued:	2015-01-12
Authority list	See, Annexure 3.5:Vocabulary for Learning Resource Type

Indicate the potential educational use(s) or type(s) of content associated with the learning resource. **Best Examples:** "presentation" and "handout"

#### Examples:

- **exercise:** An exercise is "the use of or method of using; a task prescribed or performed for the sake of attaining proficiency, for training either body or mind, or as an exhibition or test of proficiency or skill.
- **simulation:** A simulation is "the technique of imitating the behaviour of some situation or process (whether economic, military, mechanical, etc.) by means of a suitably analogous situation or apparatus.

- **questionnaire:** A questionnaire is "a list of questions by which information is sought from a selected group, usually for statistical analysis"
- **diagram:**A diagram is "an illustrative figure which, without representing the exact appearance of a resource, gives an outline or general scheme of it, so as to exhibit the shape and relations of its various parts; a set of lines, marks, or tracings which represent symbolically the course or results of any action or process, or the variations which characterize it".
- **Figure:** A figure is "the image, likeness, or representation of something material or immaterial" (OED).
- A **graph** is "a kind of symbolic diagram (used in Chemistry, Mathematics, etc.)in which a system of connections is expressed by spots or circles, some pairs of which are colligated by one or more lines " (OED);
- **Index:** An index is "a reference list; an alphabetical list" (OED).
- **Slide:** A slide is "a photographic transparency for use in a slide projector "(OED)
- **Table:** "an arrangement in columns and lines...as the multiplication table, tables of weights and measures, a table of logarithms, astronomical tables, insurance tables, time-tables, etc." (OED)
- **Narrative text:**A narrative text is " an account or narration; a history, tale, story, recital (of facts, etc.) that is a portion of the contents of a manuscript or printed book, or of a page, which constitutes the original matter, as distinct from the notes or other critical appendages"( OED)
- **Exam:** An exam is "the process of testing, by questions oral or written, the knowledge or ability of pupils, or of candidates for office, degrees, etc." (OED).
- **Problem statement:** A problem statement is "a written or oral communication setting forth... A difficult or puzzling question proposed for solution "(OED).
- **self-assessment:** A self-assessment is an " assessment or evaluation of oneself, one's actions or attitudes by oneself " (OED)
- **Lecture:** A lecture is "a discourse given before an audience upon a given subject, usually for the purpose of instruction" (OED).

### 3.6 timeRequired

Name	timeRequired
Label	Time Required
URI:	<a href="http://purl.org/dcx/lrmi-terms/timeRequired">http://purl.org/dcx/lrmi-terms/timeRequired</a>
Definition:	Approximate or typical time it takes to work with or through this learning resource for the typical intended target audience.
Description:	Based on, and mappable from, IEEE LOM 5.9: Typical Learning Time.
Description:	For example, 'PT30M' and 'PT1H25M'
Type of Term:	lrmi.timeRequired
Domain Includes:	<a href="http://schema.org/CreativeWork">http://schema.org/CreativeWork</a>
Range Includes:	<a href="http://schema.org/Duration">http://schema.org/Duration</a>
Equivalent Property:	<a href="http://schema.org/timeRequired">http://schema.org/timeRequired</a>
Is Defined By:	<a href="http://purl.org/dcx/lrmi-terms/">http://purl.org/dcx/lrmi-terms/</a>
Date Issued:	2015-01-12
Authority List	See, annexure 3.6: Vocabulary for TimeRequired

### 3.7 typicalAgeRange

Name	typicalAgeRange
Label	Typical Age Range
URI:	<a href="http://purl.org/dcx/lrmi-terms/typicalAgeRange">http://purl.org/dcx/lrmi-terms/typicalAgeRange</a>
Definition:	The typical range of ages the content's intended end

	user.
Description:	For example, '7-9', '18-'.
Description:	Based on, and mappable from, IEEE LOM 5.7: Typical Age Range.
Type of Term:	lrmi.typicalAgeRange
Domain Includes:	<a href="http://schema.org/CreativeWork">http://schema.org/CreativeWork</a>
Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#string">http://www.w3.org/2001/XMLSchema#string</a>
Equivalent Property:	<a href="http://schema.org/typicalAgeRange">http://schema.org/typicalAgeRange</a>
Is Defined By:	<a href="http://purl.org/dcx/lrmi-terms/">http://purl.org/dcx/lrmi-terms/</a>
Date Issued:	2015-01-12
Authority list	See, annexure 3.7: Vocabulary for Typical Age Range

### 3.8 useRightsUrl

Name	useRightsURL
Label	Use Rights URL
URI:	<a href="http://purl.org/dcx/lrmi-terms/useRightsUrl">http://purl.org/dcx/lrmi-terms/useRightsUrl</a>
Definition:	The URL where the owner specifies permissions for using the resource.
Description:	For example: ' <a href="http://creativecommons.org/licenses/by/3.0/">http://creativecommons.org/licenses/by/3.0/</a> , & ' <a href="http://publisher.com/content-use-description">http://publisher.com/content-use-description</a> '.
Type of Term:	lrmi.useRightsUrl
Subproperty Of:	<a href="http://schema.org/license">http://schema.org/license</a>
Domain Includes:	<a href="http://schema.org/CreativeWork">http://schema.org/CreativeWork</a>

Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#anyURI">http://www.w3.org/2001/XMLSchema#anyURI</a>
Date Issued:	2015-01-12

### 3.9 isBasedOnUrl

Name	isBasedOnUrl
Label	isBasedOnUrl
URI:	<a href="http://www.lrmi.net/the-specification">http://www.lrmi.net/the-specification</a> <a href="http://purl.org/dcx/lrmi-terms/isBasedOnUrl">http://purl.org/dcx/lrmi-terms/isBasedOnUrl</a>
Definition:	A resource that was used in the creation of this resource. This term can be repeated for multiple sources.
Description:	For example: ' <a href="http://creativecommons.org/licenses/by/3.0/">http://creativecommons.org/licenses/by/3.0/</a> , & ' <a href="http://publisher.com/content-use-description">http://publisher.com/content-use-description</a> '.
Type of Term:	lrmi.isBasedOnUrl
Subproperty Of:	<a href="http://schema.org/license">http://schema.org/license</a>
Domain Includes:	<a href="http://schema.org/CreativeWork">http://schema.org/CreativeWork</a>
Range Includes:	<a href="http://www.w3.org/2001/XMLSchema#anyURI">http://www.w3.org/2001/XMLSchema#anyURI</a>
Date Issued:	2015-01-12

### 3.10 DifficultyLevel

Name	difficultylevel
Label	Difficulty Level
URI:	



Definition:	Instances of this class represent difficulties.
Description:	How hard it is to work through this learning object for the typical target audience
Type of Term:	lrmi.educationalAlignment.difficultyLevel
Domain Includes:	
Range Includes:	rdf:resource="#Difficulty"
Equivalent Property:	-
Is Defined By:	IEEE LTSC P1484.12.1 Learning Object Metadata (LOM) specification
Date Issued:	
Authority list	See, annexure 3.10: Vocabulary for difficultylevel

### 3.11 Accessibility Related Fields

The Accessibility Metadata Project contributed a set of four properties to the schema.org CreativeWork type:

- accessibilityFeature
- accessibilityHazard
- accessibilityControl
- accessibilityAPI

The above properties to the accessibility element in the schema.org hierarchy, covers all the content specializations that are commonly sought out for compatibility, such as Book, Article, Blog and Movie. These properties provide a basis for augmenting web content with accessibility information. Their use is not limited only to what lives on the web; These properties may be used to describe any resource that is referenced from a web page, for instance the metadata can be used to enhance an online library catalogue of available works, even though the works themselves may only be available physically.

**Accessibility terms**

Property	Expected Type	Expected Values	Description
accessibilityFeature	<u>Text</u>	<ul style="list-style-type: none"> <li>• alternativeText</li> <li>• annotations</li> <li>• audioDescription</li> <li>• bookmarks</li> <li>• braille</li> <li>• captions</li> <li>• ChemML</li> <li>• describedMath</li> <li>• displayTransformability</li> <li>• highContrastAudio</li> <li>• highContrastDisplay</li> <li>• index</li> <li>• largePrint</li> <li>• latex</li> <li>• longDescription</li> <li>• MathML</li> <li>• none</li> <li>• printPageNumbers</li> <li>• readingOrder</li> <li>• signLanguage</li> <li>• structuralNavigation</li> <li>• tableOfContents</li> <li>• taggedPDF</li> <li>• tactileGraphic</li> <li>• tactileObject</li> <li>• timingControl</li> <li>• transcript</li> <li>• ttsMarkup</li> </ul>	Content features of the resource, such as accessible media, supported enhancements for accessibility and alternatives.

		<ul style="list-style-type: none"> <li>• unlocked</li> </ul>	
accessibilityHazard	<a href="#">Text</a>	<ul style="list-style-type: none"> <li>• flashing</li> <li>• noFlashingHazard</li> <li>• motionSimulation</li> <li>• noMotionSimulation</li> </ul> <p>Hazard</p> <ul style="list-style-type: none"> <li>• sound</li> <li>• noSoundHazard</li> </ul>	<p>A characteristic of the described resource that is physiologically dangerous to some users. Related to <a href="#">WCAG 2.0 guideline 2.3</a>.</p> <p>All three of the negative properties should be set if none of the hazards are known to exist. If the content has hazard(s), include positive assertions for the hazards it has and negative assertions for the others.</p> <p>If the property is not set in the positive or negative, the state of hazards is not known.</p>
accessibilityAPI	<a href="#">Text</a>	<ul style="list-style-type: none"> <li>• AndroidAccessibility</li> <li>• ARIA</li> <li>• ATK</li> <li>• AT-SPI</li> <li>• BlackberryAccessibility</li> <li>• iAccessible2</li> <li>• iOSAccessibility</li> <li>• JavaAccessibility</li> </ul>	<p>Indicates that the resource is compatible with the referenced accessibility API.</p>

		<ul style="list-style-type: none"> <li>• MacOSXAccessibility</li> <li>• MSAA</li> <li>• UIAutomation</li> </ul>	
accessibilityControl1	<u>Text</u>	<ul style="list-style-type: none"> <li>• fullKeyboardControl</li> <li>• fullMouseControl</li> <li>• fullSwitchControl</li> <li>• fullTouchControl</li> <li>• fullVideoControl</li> <li>• fullVoiceControl</li> </ul>	Identifies one or more input methods that allow access to all of the application functionality.

Source: WebSchemas/Accessibility

(<http://www.w3.org/wiki/WebSchemas/Accessibility>)

### References

1. **WebSchemas/Accessibility**. Retrieved dated August 06, 2015 from <http://www.w3.org/wiki/WebSchemas/Accessibility>

## Chapter 4

### Multimedia Metadata (MPEG-7)

#### 4.0 Introduction

To facilitate the resource discovery of audiovisual documents over the web, it is necessary to define content description standards or metadata standards for complex, multi-layered, time-dependent information-rich data streams. This is the primary goal of the "Multimedia Content Description Interface" MPEG-7, under development by the MPEG group.

MPEG-7, formally named "Multimedia Content Description Interface", is a standard for describing the multimedia content data that supports some degree of interpretation of the information's meaning, which can be passed onto, or accessed by, a device or a computer code. - ISO/IEC 15938, Development since 1998, ISO standard 2001 (V1).

A standard framework for describing all aspects of the content of a multimedia object includes low-level descriptions of individual objects in a scene and high-level abstract descriptions of scenes, information related to content usage, storage features, structural information. The main aim is to facilitate search, identify, filter, and browse audiovisual content.

MPEG-7 is a standard for describing features of multimedia content. It provides the world's richest set of audio visual descriptions. MPEG-7 uniquely provides comprehensive standardised multimedia description tools for content. These descriptions are at three levels:

- the catalogue level (e.g. title, creator, rights)
- the semantic level (who, what, when, where information about objects and events), and
- the structural level (spatio-temporal region, color histogram, timbre of an recorded instrument, texture)

#### **4.1 MPEG-7: the basic concepts**

'Descriptors' that define the syntax and the semantics of each feature or metadata element. Descriptors are intended to apply at different levels of abstraction, e.g. from low-level visual features like shape, size, texture and colour to high level 'semantic' information, e.g. about abstract concepts, events, genres, etc.

'Description Schemes' that specify the structure and semantics of the relationships between components. 'Description Definition Language' (DDL) that provides a syntax for the express, combine, extend and refine Descriptors and Description Schemes. Description Definition Language (DDL) is based on the XML Schema language. **System tools of MPEG 7 support binary coded representation for**

- efficient storage and transmission,
- transmission mechanisms,
- multiplexing of descriptions,
- synchronization of descriptions with content,
- management and protection of intellectual property

#### **MPEG-7 standard are categorized into following parts:**

- MPEG-7 Systems – binary encoding format, terminal architecture.
- MPEG-7 Description Definition Language
- MPEG-7 Visual – DT for Visual descriptions.
- MPEG-7 Audio – DT for Audio descriptions.
- MPEG-7 Multimedia Description Schemes

- MPEG-7 Reference Software
- MPEG-7 Conformance Testing
- MPEG-7 Extraction and use of descriptions – informative

MPEG-7 Visual Component comprises six content-based image/video retrieval descriptor categories:

- Color descriptors (7)
- Texture descriptors (3)
- Shape descriptors (3)
- Motion descriptors (4)
- Localization descriptors (2)
- Face recognition (1)

In the case of Audio Component, audio description framework has 17 low-level descriptors (temporal and spectral), Generic (application independent) and High-level audio description tools with:

- Audio signature description scheme
- Musical instrument timbre description tools
- Melody description tools
- General sound recognition and indexing description tools
- Spoken content description tools

Multimedia Description Schemes combine individual «descriptors» into following five elements:

- Content description: representation of perceivable information
- Content management: information about the media features, the creation and the usage of the AV content;
- Content organization: representation, the analysis and classification;
- Navigation and access: specification of summaries and variations;
- User interaction: description of user preferences and usage history

The MPEG-7 elements provide support to a broad range of applications (for example, multimedia digital libraries, broadcast media selection, multimedia editing, home

entertainment devices, etc.). MPEG-7 has potential to further extend searching of the web for multimedia content as it is searchable for text today. This would apply especially to large content archives, which are being made accessible to the public, as well as to multimedia catalogues enabling people to identify content for purchase.

#### **4.2 Application of MPEG-7**

MPEG 7 standard is very comprehensive and are applicable for:

1. Broadcast media selection (e.g., radio channel, TV channel).
2. Cultural services (history museums, art galleries, etc.).
3. Digital libraries (e.g., image catalogue, musical dictionary, film, video and radio archives).
4. E-Commerce (e.g., personalised advertising, on-line catalogues, directories of e-shops).
5. Education (e.g., repositories of multimedia courses, multimedia search for support material).
6. Home Entertainment (e.g., systems for the management of personal multimedia collections, including manipulation of content, e.g. home video editing, searching a game, karaoke).
7. Investigation services (e.g., human characteristics recognition, forensics).
8. Journalism (e.g. searching speeches of a certain politician using his name, his voice or his face).
9. Multimedia directory services (e.g. yellow pages, Tourist information, Geographical information systems).
10. Multimedia editing (e.g., personalised electronic news service, media authoring).
11. Remote sensing (e.g., cartography, ecology, natural resources management).
12. Shopping (e.g., searching for clothes that you like).
13. Social (e.g. dating services).
14. Surveillance (e.g., traffic control, surface transportation, non-destructive testing in hostile environments).

However, from NDL perspective a "hybrid" approach which combines both simple unqualified Dublin Core and MPEG-7 descriptors within a single description container would be most appropriate. Dublin Core can be used for generic media-



independent search and retrieval while MPEG-7 can be used for object-specific fine-grained queries. Each structural component may comprise both a set of Dublin Core attributes plus a set of MPEG-7 attributes. For instance if:

- **DC.Type="Image.Moving.TV.News.Scene"** then valid descriptors will include both the DC simple elements plus MPEG-7 descriptors such as script, transcript, editlist, keyframe etc.
- **DC.Type="Image.Moving.TV.News.Scene.Shot"** then valid descriptors will include both the DC elements plus keyframe, camera\_distance, camera\_angle, camera\_motion, opening\_transition, closing\_transition.
- **DC.Type="Image.Moving.TV.News.Scene.Shot.Frame"** then a valid descriptors will be the DC elements plus colour\_histogram.

This is illustrated in Figure below:

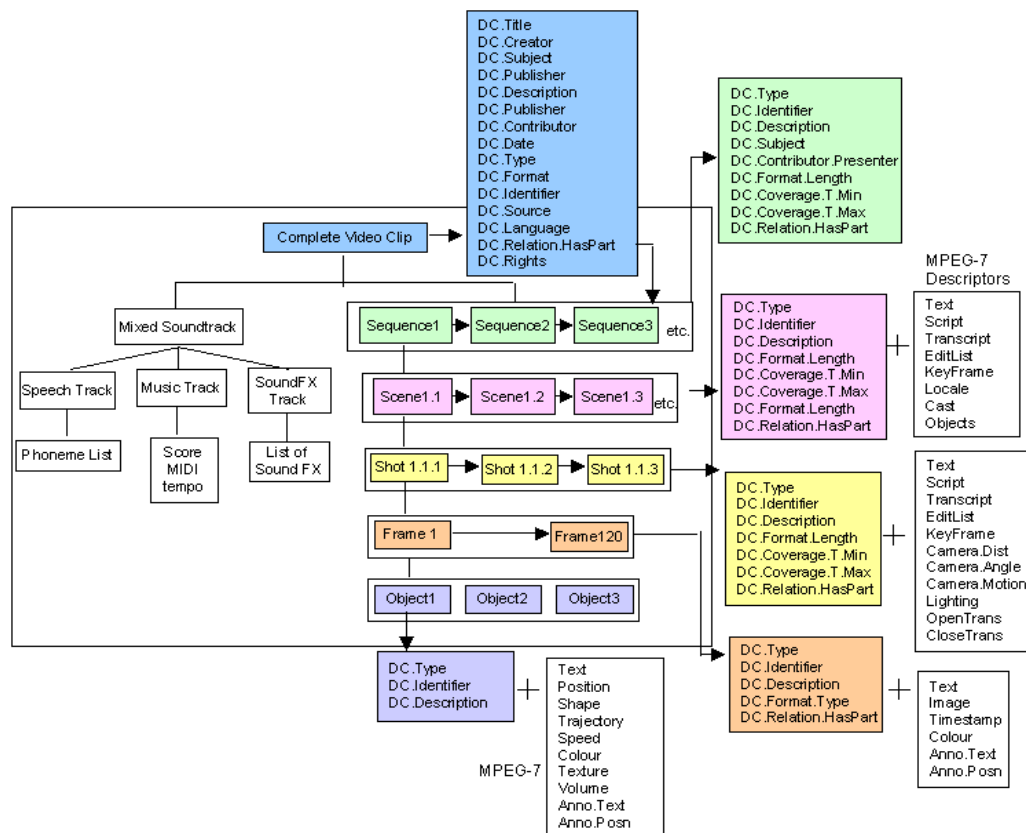


Figure-1: Multilayered Hierarchical Structure and Attributes of Video

Source: <http://www8.org/w8-papers/3c-hypermediavideo/comparison/comparison.html>

Figure above shows the logical structure, the structural components and their associated Dublin Core attributes and some MPEG-7 attributes for the proposed video description scheme. Integration of DC and MPEG 7 elements will provide required granularity for Dublin Core to MPEG-7 Mapping.

### 4.3 Dublin Core to MPEG-7 Mapping

Following table shows the mapping of Dublin Core to MPEG-7 using XPath expressions to represent the equivalent MPEG-7 descriptors.

DC Elements	Definition	MPEG-7 Path
Title	A name given to a resource.	CreationInformation.Creation.Title[@type="main"]
Creator	An entity primarily responsible for making the content of the resource	CreationInformation/Creation/Creator[Role/Name="creator"]/Agent/Name
Subject	The topic of the content of the resource	CreationInformation/Classification/Subject
Description	An account of the content of the resource	CreationInformation/Creation/Abstract

Publisher	An entity responsible for making the resource available	CreationInformation/Creation/Creator[Role/Name="Publisher"]/Agent/NameUsageInformation/Availability/Dissemination/Disseminator[Role="Publisher"]/Agent/Name
Contributor	An entity responsible for making contributions to the content of the resource	CreationInformation/Creation/Creator[Role/Name="contributor"]/Agent/Name
Date	A date associated with an event in the life cycle of the resource	CreationInformation/Creation/CreationCoordinates/DateCreationInformation/Classification/Release[@date] DescriptionMetadata/CreationTime (date at which MPEG-7 metadata description
Type	The nature or genre of the content of	CreationInformation/Classification/Genre
Format	The physical or digital manifestation of the resource, file format or	MediaInformation/MediaProfile/MediaFormat/FileFormat
Identifier	An unambiguous reference to the resource within a given context	MediaInformation/MediaIdentification/EntityIdentifierMediaInformation/MediaProfile/MediaInstance/InstanceIdentifierMediaInformation/MediaProfile/MediaInstance/MediaLocator/MediaUri

Source	A Reference to a resource from which the present resource is derived	Variation/Source/Video/MediaLocator/MediaUriVariationSet/Source/Video/MediaLocator/MediaUriMediaInformation/MediaIdentification/EntityIdentifierMediaInformation/MediaProfile[@master="true"]/MediaInstance/MediaLocator/MediaUri
Language	A language of the intellectual content of the resource	CreationInformation/Classification/Language[@type="original" "dubbed" "background"];CreationInformation/Classification/CaptionLanguage
Relation	A reference to a related resource	CreationInformation/RelatedMaterial/MediaLocator/MediaUriMediaInformation/MediaProfile/MediaInstance/MediaLocator/MediaUri/VariationSet/Variation/VariationRelationship
Coverage	The extent or scope of the content of the	SemanticBase[@xsi:type="SemanticTimeType"]/TimeSemanticBase[@xsi:type="SemanticPlaceType"]/Place
Rights	Information about rights held in and over the resource	CreationInformation/Creation/CopyrightStringUsageInformation/Rights/RightsID

## References

- <http://www8.org/w8-papers/3c-hypermediavideo/comparison/comparison.html>

## Chapter 5

### Theses and Dissertation Metadata

#### 5.0 Application Profile for Theses and Dissertation

Theses and dissertation are very special kinds of documents. Therefore, in addition to generic metadata, which are essential for describing any digital documents, it is also required to have special type of metadata elements set related to Theses and Dissertation. Following metadata elements are identified for the purpose: These are as follows:

- Advisor
- Researcher
- Awarded Date
- Publisher Date
- Department
- Institution
- Place
- Degree

An example of PhD Thesis is given below:

<b>Example-1</b>
<b>Thesis Title:</b> Development And Validation Of Soft Computing Based Models For Pulsed Gas Metal Arc Welding Process.
<b>Author:</b> Pal, Sukhomay.
<b>Guide:</b> Pal, Surjya K and Samantaray, Arun K
<b>URI:</b> <a href="http://hdl.handle.net/123456789/371">http://hdl.handle.net/123456789/371</a>
<b>Date of Award:</b> 2008

### 5.1 Advisor

Name of Term	<b>advisor</b>
Fully Specified Namespace	dc.contributor.advisor
Term URI	Has to be specified
Defined By	Has to be specified
Definition	A group of person supervising the thesis. The supervisors on the thesis
Comments	Repeatable in case of co-supervision
Type of term	element
Has Encoding Scheme	NIL
Obligation	M
Occurrence	MIN=0, MAX=2
Example Usage	Pal, Surjya K and Samantaray, Arun K

### 5.2 Researcher

Name of Term	<b>researcher</b>
Fully Specified Namespace	dc.creator.researcher
Term URI	Has to be specified
Defined By	Has to be specified
Definition	A person responsible for the research content of the thesis
Comments	
Type of term	element
Has Encoding Scheme	NIL
Obligation	M
Occurrence	MIN=0, MAX=1
Example Usage	Pal, Sukhomay

### 5.3 Awarded

Name of Term	<b>awarded</b>
Fully Specified Namespace	dc.date.awarded
Term URI	Has to be specified
Defined By	Has to be specified
Definition	Date on which the degree was awarded
Comments	
Type of term	element
Has Encoding Scheme	ISO 8601 - <a href="http://purl.org/dc/terms/ISO8601">http://purl.org/dc/terms/ISO8601</a>
Obligation	R
Occurrence	MIN=0, MAX=1
Example Usage	2008

### 5.4 Date

Name of Term	<b>Date</b>
Fully Specified Namespace	dc.publisher.date
Term URI	Has to be specified
Defined By	Has to be specified

Definition	Ph.D. awarded date.
Comments	
Type of term	element
Has Encoding Scheme	ISO 8601 - <a href="http://purl.org/dc/terms/ISO8601">http://purl.org/dc/terms/ISO8601</a>
Obligation	R
Occurrence	MIN=0, MAX=1
Example Usage	2008

### 5.5 Department

Name of Term	<b>Department</b>
Fully Specified Namespace	dc.publisher.department
Term URI	Has to be specified
Defined By	Has to be specified
Definition	Department in which the awardee is registered
Comments	
Type of term	element
Has Encoding Scheme	Vocabulary containing list of departments
Obligation	R
Occurrence	MIN=0, MAX=1
Example Usage	Mechanical Engineering

### 5.6 Institution

Name of Term	<b>Institution</b>
Fully Specified Namespace	dc.publisher.institution
Term URI	Has to be specified
Defined By	Has to be specified
Definition	Name of the institution, mostly the name of the institution that granted the award.
Comments	
Type of term	element
Has Encoding Scheme	NIL
Obligation	M



Occurrence	MIN=0, MAX=2
Example Usage	IIT Kharagpur / Indian Institute of Technology Kharagpur

### 5.7 Place

Name of Term	<b>Place</b>
Fully Specified Namespace	dc.publisher.place
Term URI	Has to be specified
Defined By	Has to be specified
Definition	The place of publication
Comments	
Type of term	element
Has Encoding Scheme	NIL
Obligation	O
Occurrence	MIN=0, MAX=1
Example Usage	Kharagpur

### 5.8 Degree

Name of Term	<b>Degree</b>
Fully Specified Namespace	dc.type.degree
Term URI	Has to be specified
Defined By	Has to be specified
Definition	Degree awarded to the recipient
Comments	
Type of term	element
Has Encoding Scheme	Vocabulary containing 'Master's level' and 'Doctoral level'
Obligation	M
Occurrence	MIN=0, MAX=2
Example Usage	See, annexure 5.8: Vocabulary for Type of Degree



## CHAPTER 6 WORKED OUT EXAMPLES

### Worked Out Example

#### 6.0 Introduction

This chapter provides few examples and its solutions for the purpose of data input in NDL through input form. The worked out examples are given below.

#### 6.1 Example 1: Generic Metadata and Educational Metadata

The first example deals with generic metadata elements which are essentially required to describe a document.

Subject: Library Science

Paper: digital library

Module Name: Technical infrastructure of a digital library

Paper coordinator: JagdishArora

#### List of Generic Metadata Elements

S.N	Elements	Fully Specified Namespace	Value/attributes	Remarks
1.	Contributor	dc.contributor	INFLIBNET	
2.	Author	dc.contributor.author	Arora, Jagdish	

3.	Illustrator	dc.contributor.illustrator	<May be available>	
4.	Editor	dc.contributor.editor	<May be available>	
5.	Coverage	dc.coverage	The time, culture, geography or region to which this learning object applies.	Not Available
6.	Creator	dc.creator	Patel, Yatrik	
7.	Date	dc.date	2015/06/29	Not available
8.	Date-Created	dc.date.created	2015/06/29	(Metadata created date)
9.	Date Accessioned	dc.date.accessioned	<May be available>	
10.	Date-Issued	dc.date.issued	<May be available>	
11.	Date-copyright	dc.date.copyright	2014/12/31	
12.	description	dc.description	this module are to discuss and impart knowledge on broader aspects of technical infrastructure of a digital library i.e.computers and network infrastructure requirement including server-side hardware components, server-	As a abstract

			side software components, and client-side hardware & software components as well as role of cloud computing in digital libraries.	
13.	Table of Content	dc.description.tableofcontent	<May be available>	
14.	Format	dc.format	Pdf, mp4	The file format, physical medium, or dimensions of the resource
15.	Extent	dc.format.extent		
16.	Mimetype	dc.format.mimetype	Video	The material or physical carrier of the resource.
17.	Identifier	dc.identifier	Ex. <a href="http://epgp.inflibnet.ac.in/index.php">http://epgp.inflibnet.ac.in/index.php</a>	Website (Identifier-ISBN, Identifier-ISSN, Identifier-URI, Identifier-bibliographic Citation) May

				be available one or more
18.	Language	dc.language	English	
19.	Publisher	dc.publisher	Inflibnet Centre, Gandhinagar	
20.	Relation	dc.relation		Relation includes: Is Referenced By Is Part Of Requires Has Part Is Part of Series References
21.	Is Part Of	dc.relation.ispartof	Technical infrastructure of a digital library	
22.	Rights	dc.rights	MHRD (NMEICT)	Information about rights held in and over the resource.
23.	Subject	dc.subject	Digital Library (Education--Digital libraries)	Web of Science category
24.	Title	dc.title	Technical infrastructure of a digital library	
25.	Alternative title	dc.title.alternative		Not available

26.	Type	dc.type	pdf, avi	File format
-----	------	---------	----------	-------------

### Example 1: Educational Metadata

The first example deals with generic metadata as well as educational metadata elements which are essentially required to describe a document.

#### List of Educational Metadata

S.N	Elements	Metadata Standards	
1.	alignmentType	LRMI	TeachesPG(EducationLevel)
2.	educationalAlignment [Board]	LRMI	UGC
3.	educationalRole	LRMI	Student
4.	educationalUse	LRMI	Lecture
5.	interactivityType	LRMI	Expositive
6.	learningResourceType	LRMI	Video. On-Line, Quiz
7.	timeRequired	LRMI	PT1H15M
8.	typicalAgeRange	LRMI	18+
9.	useRightsUrl	LRMI	CC-By-SA <a href="http://epgp.inflibnet.ac.in/beta/#">http://epgp.inflibnet.ac.in/beta/#</a>
10.	Accessibility related fields	LRMI	-
11.	Difficulty Level	IEEE LOM	Medium

## 6.2 Example 2- Generic Metadata and Educational Metadata

### Example 2: Generic Metadata

The second example deals with generic metadata elements which are essentially required to describe a document.

#### Example 2

Subject category: (Arts and Humanities)

Projects Subject: (English language and literature)

**List of Generic Metadata Elements**

S.N	Elements	Fully Specified Namespace	Attribute/Value	Remarks
1.	Contributor	dc.contributor	Maharaja Krishnakumarsinhji Bhavnagar University, Bhavnagar	
2.	Author	dc.contributor.author	Barad, Dilip	
3.	Illustrator	dc.contributor.illustrator	<May be available>	
4.	Editor	dc.contributor.editor	<May be available>	
5.	Coverage	dc.coverage	The time, culture, geography or region towhich this learning object applies.	Not Available
6.	Creator	dc.creator	Barad, Dilip	
7.	Date	dc.date	2013 /06/17	Not available
8.	Date- Created	dc.date.created	2015/06/29	(Metadata created date)
9.	Date- Accessioned	dc.date.accessioned	<May be available>	
10.	Date-Issued	dc.date.issued	<May be available>	
11.	Date- Updated	dc.date.updated	<May be available>	
12.	Date- copyright	dc.date.copyright	2013/06/17	
13.	description	dc.description	Plato was a great moral philosopher and his primary	Abstract



			concentration was to induce moral values in the society and to seek the ultimate Truth. So when he examines poetry his tool is rather moral and not aesthetic. Aristotle examines poetry as a form of art and evaluates its constituent elements on the basis of its aesthetic beauty.	
14.	Table of Content	dc.description.tableofcontents	<May be available>	
15.	Format	dc.format	pdf, mp4	The file format, physical medium, or dimensions of the resource
16.	Mimetype	dc.format.mimetype	Video	The material or physical carrier of the resource.
17.	Identifier	dc.identifier	<a href="https://sites.google.com/site/nmeictproject/literary-theory-and-criticism">https://sites.google.com/site/nmeictproject/literary-theory-and-criticism</a>	Website (Identifier-ISBN, Identifier-

				ISSN, Identifier- URI, Identifier- bibliographic Citation) May be available one or more
18.	Language	dc.language.iso	English	
19.	Publisher	dc.publisher	Ex. Maharaja Krishnakumarsinhji Bhavnagar University, Bhavnagar	Examples of a Publisher include a person, an organization, or a service. Typically, the name of a Publisher should be used to indicate the entity.
20.	Relation	dc.relation		Relation includes: Is Referenced By Is Part Of Requires Has Part Is Part of

				Series References
21.	Rights	dc.rights	MHRD (NME-ICT)	Information about rights held in and over the resource.
22.	Subject	dc.subject	Arts and Humanities (English language and literature)	Web of Science category
23.	Title	dc.title	Plato and Aristotle	
24.	Alternative title	dc.title.alternative		Not available
25.	Type	dc.type	PDF and MP4, swf	File format

**Example-2:List of Educational Metadata**

S.N	Elements	Metadata Standards	Remarks
1.	alignmentType	LRMI	TeachesPG(EducationLevel)
2.	educationalAlignment [Board]	LRMI	UGC
3.	educationalRole	LRMI	Student
4.	educationalUse	LRMI	Lecture
5.	interactivityType	LRMI	Expositive
6.	learningResourceType	LRMI	Video, On-Line, Quiz
7.	timeRequired	LRMI	PT1H20M
8.	typicalAgeRange	LRMI	18+
9.	useRightsUrl	LRMI	CC-By-SA <a href="http://epgp.inflibnet.ac.in">http://epgp.inflibnet.ac.in</a>
10.	Accessibility related fields	LRMI	-
11.	Difficulty Level	IEEE LOM	Easy

### 6.3 Example 3: Generic Metadata and Educational Metadata

The third example deals with generic metadata elements which are essentially required to describe a document.

#### **Example 3**

Subject category: Biological Science

Project subject: Zoology

Module name: Cockroach

#### **List of Generic Metadata Elements**

S.N	Elements	Fully Specified Namespace	Value/attributes	Remarks
1	Contributor	dc.contributor	V P & RTPP Science College, VallabhVidyanagar	
2	Author	dc.contributor.author	Bhatt, Nikunj	
3	Illustrator	dc.contributor.illustrator	<May be available>	
4	Editor	dc.contributor.editor	<May be available>	
5	Coverage	dc.coverage	The time, culture, geography or region towhich this learning object applies.	Not Available
6	Creator	dc.creator	Bhatt, Nikunj	
7	Date	dc.date	2014/12/31	Not available
8	Date-Created	dc.date.created	2015/06/29	(Metadata created date)
9	Date-Accessioned	dc.date.accessioned	<May be available>	
10	Date-Issued	dc.date.issued	<May be available>	

11	Date-Updated	dc.date.updated	<May be available>	
13	Date-copyright	dc.date.copyright	2014/12/31	
14	description	dc.description	This learning module describes the Systematic Position, Habits and Habitat, Structure, Locomotion, Ingestion, Behavior, Reproduction etc of Cockroach.	As a abstract
15	Table of Contents	dc.description.tableofcontents	<May be available>	
16	Format	dc.format	mp4	The file format, physical medium, or dimensions of the resource
17	Extent	dc.format.extent		
19	Mimetype	dc.format.mimetype	Video	The material or physical carrier of the resource.
20	Identifier	dc.identifier	<a href="http://www.zoologyexperiments.com">http://www.zoologyexperiments.com</a>	Website (Identifier-ISBN, Identifier-ISSN, Identifier-URI, Identifier-bibliographic)

				Citation) May be available one or more
21	Language	dc.language.iso	English	
22	Publisher	dc.publisher	V P & RTPP Science College, VallabhVidyanagar	
23	Relation	dc.relation		Relation includes: Is Referenced By Is Part Of Requires Has Part Is Part of Series References
25	Rights	dc.rights	MHRD (MNE-ICT)	Information about rights held in and over the resource.
26	Subject	dc.subject	Zoology(Biological Science)	Web of Science category
27	Title	dc.title	Cockroach	
28	Alternative title	dc.title.alternative		Not available
29	Type	dc.type	mp4	File format

**Example-3: Educational Metadata**

S.N	Elements	Metadata Standards	Remarks
1	alignmentType	LRMI	TeachesPG(EducationLevel)

2	educationalAlignment [Board]	LRMI	UGC
3	educationalRole	LRMI	Student
4	educationalUse	LRMI	Lecture
5	interactivityType	LRMI	Expositive
6	learningResourceType	LRMI	Video, On-Line, Quiz
7	timeRequired	LRMI	PT45M
8	typicalAgeRange	LRMI	18+
9	useRightsUrl	LRMI	CC-By-SA <a href="http://epgp.inflibnet.ac.in">http://epgp.inflibnet.ac.in</a>
10	Accessibility related fields	LRMI	-
11	Difficulty Level	IEEE LOM	Medium

## CHAPTER 7 ANNEXURE FOR VOCABULARY USE

### Annexure 2.5.3: Example for Table of Contents

```
{  
"Business Vignette": "The Relational Revolution",  
"Chapter 1 : Database Systems": {  
"Why DataBases?": 5,  
"Introducing the Database": {  
"Role and Advantages of the DBMS": 7,  
"Types of Databases": 9  
},  
"Why Database Design is important": 10,  
"Evolution of File System Data Processing": {  
"Manual File Systems": 11,  
"File System Redux : Modern End-User Productivity Tools": 14  
},  
"Summary": 20,  
"Key Terms": 25,  
"Review Questions": 26,  
}
```



```

"Problems": 26
},
"Chapter 2 : Data Models": {
  "Data Modeling and Data Models": 30,
  "The Importance of Data Models": 30,
  "Data Model Basic Building Blocks": 31,
  "Business Rules": {
    "Discovering Business Rules": 33,
    "Naming Conventions": {
      "Actual Naming": 34,
      "Formal Naming": 35
    }
  }
}
}
}
}
}

```

**Annexure 2.6.2: Vocabulary for MimeType**

S.N	readable_value	stored_value
1.	3G2	video/3gpp2
2.	3GP	video/3gp
3.	7Z	application/x-7z-compressed
4.	AAC	audio/x-aac
5.	AIF / AIFF / AIFC	audio/x-aiff
6.	AVI	video/avi
7.	AZW	application/vnd.amazon.ebook
8.	BMP	image/bmp
9.	BZ	application/x-bzip
10.	BZ2	application/x-bzip2
11.	CBR / CBA / CBZ	application/x-cbr
12.	CSV	text/csv
13.	DjVu / DJV	image/vnd.djvu

14.	DOC / DOT	application/ms-word
15.	DOCX	application/vnd.openxmlformats-officedocument.wordprocessingml.document
16.	DVI	application/x-dvi
17.	EPUB	application/epub+zip
18.	Flac	audio/flac
19.	FLV	video/x-flv
20.	GIF	image/gif
21.	GZ / GZIP	application/x-gzip
22.	GZIP	application/gzip
23.	H264	video/h264
24.	HELP	application/x-helpfile
25.	HTM / HTML	text/html
26.	IGES	model/iges
27.	JNLP	application/x-java-jnlp-file
28.	JPG / JPEG	image/jpeg
29.	Latex	application/x-latex
30.	Linear PCM	audio/L24
31.	M4V	video/x-m4v
32.	MESH	model/mesh
33.	MIDI / MID	audio/midi
34.	MKV	video/x-matroska
35.	MOBI	application/x-mobipocket-ebook
36.	MP2 / MPA	audio/mpeg
37.	MP3	audio/mpeg3
38.	MP4	audio/mp4
39.	MP4 / MPG4	video/mp4
40.	MPEG	video/mpeg
41.	ODB	application/vnd.oasis.opendocument.database
42.	ODC	application/vnd.oasis.opendocument.chart
43.	ODC	application/vnd.oasis.opendocument.chart

44.	ODG	application/vnd.oasis.opendocument.graphics
45.	ODI	application/vnd.oasis.opendocument.image
46.	ODP	application/vnd.oasis.opendocument.presentation
47.	ODS	application/vnd.oasis.opendocument.spreadsheet
48.	ODT	application/vnd.oasis.opendocument.text
49.	OGG	audio/ogg
50.	OGG	video/ogg
51.	Opus	audio/opus
52.	OXPS	application/oxps
53.	PDF	application/pdf
54.	PNG	image/png
55.	PPSX	application/vnd.openxmlformats-officedocument.presentationml.slideshow
56.	PPT	application/ms-powerpoint
57.	PPTX	application/vnd.openxmlformats-officedocument.presentationml.presentation
58.	PS / EPS	application/postscript
59.	QT / MOV	video/quicktime
60.	RAR	application/x-rar-compressed
61.	RDF	application/rdf+xml
62.	RealAudio	audio/vnd.rn-realaudio
63.	RTF	text/rtf
64.	SGML / SGM	text/sgml
65.	SLDX	application/vnd.openxmlformats-officedocument.presentationml.slide
66.	SVG / SVGZ	image/svg+xml
67.	SWF	application/x-shockwave-flash
68.	TGZ	application/x-compressed
69.	TIF / TIFF	image/tiff

70.	TXT	text/plain
71.	Vorbis	audio/vorbis
72.	WAV	audio/vnd.wave
73.	WebM	audio/webm
74.	WebM	video/webm
75.	WMA	audio/x-ms-wma
76.	WMV	video/x-ms-wm
77.	WRL	model/vrml
78.	X3D	model/x3d
79.	XDP	application/vnd.adobe.xdp+xml
80.	XHTML	application/xhtml+xml
81.	XLS	application/ms-excel
82.	XLSX	application/vnd.openxmlformats-officedocument.spreadsheetml.sheet
83.	XML	text/xml
84.	XML	application/xml
85.	XPDF	application/vnd.adobe.xfdf
86.	XPS	application/ms-xpsdocument
87.	ZIP	application/zip

**Annexure -2.8: Vocabulary for Language**

S.N	readable_value	stored_value
1.	English	eng
2.	Hindi	hin
3.	Bengali	bng
4.	Assamese	asm
5.	Bhojpuri	bih
6.	Gujarati	guj
7.	Kannada	kan
8.	Kashmiri	kas
9.	Malayalam	mal

10.	Marathi	mar
11.	Nepali	nep
12.	Oriya	ori
13.	Punjabi	pan
14.	Sanskrit	san
15.	Sindhi	snd
16.	Tamil	tam
17.	Telugu	tel
18.	Urdu	urd
19.	French	fra
20.	Italian	ita
21.	Spanish	spa
22.	Shona	sna
23.	Zhuang, Chang	zha

**Annexure 2.15: Vocabulary for Type**

S.N	readable_value	stored_value
1.	Text	text
2.	Video	video
3.	Audio	audio
4.	Image	image
5.	Presentation	presentation
6.	Application	application
7.	Animation	animation
8.	Simulation	simulation

**Annexure -3.1.1: Vocabulary for Alignment Type**

S.N	Name
1.	assesses
2.	teaches

3.	requires
4.	textComplexity
5.	readingLevel
6.	educationalSubject
7.	educationLevel

**Annexure -3.1.2: Vocabulary for Educational Alignment –educationalFramework**

<b>Irmi.educationalAlignment.educationalFramework</b>	
<b>S.N</b>	<b>stored_value</b>
1.	All India Council for Technical Education (AICTE)
2.	Andhra Pradesh Board of Intermediate Education (APBIE)
3.	Andhra Pradesh Board of Secondary Education (APBSE)
4.	Assam Board of Secondary Education
5.	Bar Council of India (BCI)
6.	Bihar School Examination Board(BSEB)
7.	Board of Higher Secondary Education, New Delhi
8.	Board of School Education, Haryana(BSEH)
9.	Board of Secondary Education Madhya Bharat Gwalior
10.	Board of Secondary Education, Madhya Pradesh
11.	Board of Secondary Education, Rajasthan
12.	Board of Youth Education India(BYEI)
13.	Central Board Of Education Ajmer New Delhi(CBEAJMER)
14.	Central Board Of Patna, Bihar
15.	Central Board of Secondary Education (CBSE)
16.	Central Board of Secondary Education(CBSE)
17.	Central Council of Homeopathy (CCH)
18.	Central Council of Indian Medicine (CCIM)
19.	Chhattisgarh Board of Secondary Education(CGBSE)

20.	Dental Council of India (DCI)
21.	Distance Education Council (DEC)
22.	Goa Board of Secondary & Higher Secondary Education
23.	Gujarat Secondary Education Board
24.	Himachal Pradesh Board of School Education
25.	Indian Board of School Education
26.	Indian Council of Agricultural Research (ICAR)
27.	Indian Council of Secondary Education (ICSE)
28.	Indian Nursing Council (INC)
29.	J&K State Board of School Education
30.	Jharkhand Academic Council
31.	Karnataka Board of the Pre-University Education
32.	Karnataka Secondary Education Examination Board
33.	Kerala Board of Public Examinations
34.	Maharashtra State Board of Secondary and Higher Secondary Education
35.	Manipur Board of Secondary Education
36.	Manipur Council of Higher Secondary Education
37.	Medical Council of India (MCI)
38.	Meghalaya Board of School Education
39.	Mizoram Board of School Education
40.	Nagaland Board of School Education
41.	National Assessment and Accreditation Council (NAAC)
42.	National Council for Teacher Education (NCTE)
43.	National Institute of Open Schooling
44.	Northwest Accreditation Commission [NWAC]
45.	Orissa Board of Secondary Education
46.	Orissa Council of Higher Secondary Education
47.	Pharmacy Council of India (PCI)
48.	Punjab School Education Board
49.	Rajasthan Board of Secondary Education

50.	Rehabilitation Council of India (RCI)
51.	Sampurnanand Sanskrit Vishwavidyalaya Varanasi Uttar Pradesh
52.	Tamil Nadu Board of Higher Secondary Education
53.	Tamil Nadu Board of Secondary Education
54.	Tamilnadu Council for Open and Distance Learning
55.	Telangana State Board of Intermediate Education
56.	Tripura Board of Secondary Education
57.	University Grants Commission (UGC)
58.	Uttar Pradesh Board of High School and Intermediate Education
59.	Uttarakhand Board of School Education
60.	Veterinary Council of India (VCI)
61.	West Bengal Board of Secondary Education (WBSE)
62.	West Bengal Council of Higher Secondary Education (WBCHSE)
63.	West Bengal State Council of Vocational Education and Training (WBSCVET)

**Annexure 3.1.3: Vocabulary for Educational Level**

S.N	readable_value	stored_value
1.	upto I	preSchool
2.	I - IV	lowerPrimary
3.	V - VIII	upperPrimary
4.	IX - X	middleSchool
5.	XI - XII	highSchool
6.	UG - PG	ug_pg
7.	Career Development / Technical Study	career_tech
8.	Adult Education	adultEducation



**Annexure -3.2: Vocabulary for Educational Role**

S.N	readable_value	stored_value
1	Student	student
2	Teacher	teacher
3	Parent	parent
4	School Admin	schoolAdmin
5	State Admin	stateAdmin
6	Country Admin	countryAdmin

**Annexure 3.3: Vocabulary for Educational Use**

S.N	readable_value	stored_value
1.	Analogies	analogies
2.	Classifying	classifying
3.	Demonstration	demonstration
4.	Experimental	experimental
5.	Classroom	classroom
6.	Research	research
7.	Assessment	assessment
8.	Brainstroming	brainstroming
9.	Comparing	comparing
10.	Co-operative Learning	coOperativeLearning
11.	Discussion / Debate	discussion_debate
12.	Drill / Practice	drill_practice
13.	Field Trip	fieldTrip
14.	Homework	homework
15.	Reading	reading
16.	Inquiry	inquiry
17.	Lecture	lecture
18.	Problem Solving	problemSolving
19.	Project	project
20.	Reflection	reflection

21.	Assignment	assignment
22.	Group Work	groupWork
23.	Self Learning	selfLearning
24.	Solution	solution

**Annexure -3.4: Vocabulary for Interactivity Type**

lrmi.interactivityType		
S.N	readable_value	stored_value
1	Active	active
2	Expositive	expositive
3	Mixed	mixed

**Annexure -3.5: Vocabulary for Learning Resource Type**

S.N	readable_value	stored_value
1.	Activity	activity
2.	Audio Lecture	audioLecture
3.	Presentation	presentation
4.	Podcast Presentation	podcastPresentation
5.	Broadcast	broadcast
6.	Book	book
7.	Lab Material	labMaterial
8.	Discussion	discussion
9.	HandsOn	handsOn
10.	Handout	handout
11.	Web Course	webCourse
12.	Quiz	quiz
13.	Simulation	simulation
14.	Lesson Plan	lessonPlan

15.	Educational Game	educationalGame
16.	Educational App	educationalApp
17.	Image	image
18.	Graph	graph
19.	Chart	chart
20.	Map	map
21.	Video Lecture	videoLecture
22.	Question Paper	questionPaper
23.	Technical Manual	technicalManual
24.	Animation	animation
25.	Exercise	exercise
26.	Question Set	questionSet
27.	Self Assessment	selfAssessment
28.	Model Answers	modelAnswers
29.	Solution	solution
30.	Notes	notes
31.	Article	article
32.	Technical Report	technicalReport

### **Annexure -3.6: Duration (Time Required)**

Durations are represented by the format P[n]Y[n]M[n]DT[n]H[n]M[n]S or P[n]W. In these representations, the [n] is replaced by the value for each of the date and time elements that follow the [n]. Leading zeros are not required, but the maximum number of digits for each element should be agreed to by the communicating parties. The capital letters *P*, *Y*, *M*, *W*, *D*, *T*, *H*, *M*, and *S* are designators for each of the date and time elements and are not replaced.

- *P* is the duration designator (historically called "period") placed at the start of the duration representation.
- *Y* is the year designator that follows the value for the number of years.
- *M* is the month designator that follows the value for the number of months.
- *W* is the week designator that follows the value for the number of weeks.

- D is the day designator that follows the value for the number of days.
- T is the time designator that precedes the time components of the representation.
- H is the hour designator that follows the value for the number of hours.
- M is the minute designator that follows the value for the number of minutes.
- S is the second designator that follows the value for the number of seconds.

For example, "P3Y6M4DT12H30M5S" represents a duration of "three years, six months, four days, twelve hours, thirty minutes, and five seconds".

**Annexure -3.7: Typical Age Range**

S.N	stored_value
1.	3-7
2.	8-12
3.	13-17
4.	18-22
5.	22+

**Annexure -3.10: Vocabulary for Difficulty Level**

S.N	readable_value	stored_value
1	Easy	easy
2	Medium	medium
3	Difficult	difficult

**Annexure 3.11: Vocabulary for Accessibility Features**

S.N	Name
1.	alternativeText
2.	annotations
3.	audioDescription
4.	bookmarks

5.	braille
6.	captions
7.	ChemML
8.	describedMath
9.	displayTransformability
10.	highContrastAudio
11.	highContrastDisplay
12.	index
13.	largePrint
14.	latex
15.	longDescription
16.	MathML
17.	printPageNumbers
18.	readingOrder
19.	signLanguage
20.	structuralNavigation
21.	tableOfContents
22.	taggedPDF

**Annexure 5.8: Vocabulary for Type of Degree**

S.N	readable_value	stored_value
1.	B.C.A.	bca
2.	M.C.A.	mca
3.	B.Sc.	bsc
4.	M.Sc.	msc
5.	B.Tech.	btech
6.	M.Tech.	mtech
7.	L.L.B.	llb
8.	B.S.	bs
9.	M.S.	ms
10.	Ph.D.	phd
11.	P.D.F.	pdf

12.	B.B.A.	bba
13.	M.B.A.	mba
14.	Diploma	diploma
15.	B.Com.	bcom
16.	M.Com.	mcom
17.	B.E.	be
18.	M.E.	me
19.	B.Arch.	barch
20.	M.Arch.	march
21.	B.A.	ba
22.	M.A.	ma
23.	<u>B.Lib.Sc</u>	blib
24.	<u>M.Lib.Sc</u>	mlib
25.	M.B.B.S.	mbbs
26.	M.D.	md
27.	M.Phil.	mphil
28.	B.F.A.	bfa
29.	M.F.A.	mfa
30.	B.Pharm.	bpharm
31.	M.Pharm.	mpharm
32.	B.Ed.	bed
33.	M.Ed.	med

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schemes
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