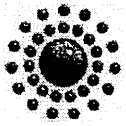
1999-05-04



NOTE-DCRM-19990504

Dublin Core Reference Model

Submitted to DCMI on 04 May 1999

This version:
http://www.dstc.edu.au/RDU/DCAC/NOTE-DCRM-19990504.html
Latest version:
http://www.dstc.edu.au/RDU/DCAC/NOTE-DCRM.html
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Status of this document

This document is a note submitted to the Dublin Core Metadata Initiative. It is provided for information only, and is subject to revision. This indicates no endorsement of its content, nor that DCMI has, is, or will be allocating any resources to the issues addressed by the NOTE.

This document is a submission to DCMI from DSTC.

Comments on this document should be sent to renato@dstc.edu.au.

Abstract

The documents presents requirements for the Dublin Core Reference Model. The purpose of which is to establish a common framework from with various implementations can refer and conform. The Dublin Core Reference Model establishes the semantics and model for versions of the Dublin Core metadata element set.

Table of Contents

Introduction

This document presents a Reference Model for the Dublin Core metadata element set. The purpose is to provide a common view onto the semantic model used to describe current and future versions of Dublin Core metadata.

The Dublin Core Reference Model covers the following versions of the element set:

- Dublin Core Version 1.0 - previously referred to as *simple* or *unqualified* Dublin Core - which supports a basic metadata model; and
- Dublin Core Version 2.0 - previously referred to as *complex* or *qualified* Dublin Core - which supports a rich metadata model and express-ability.

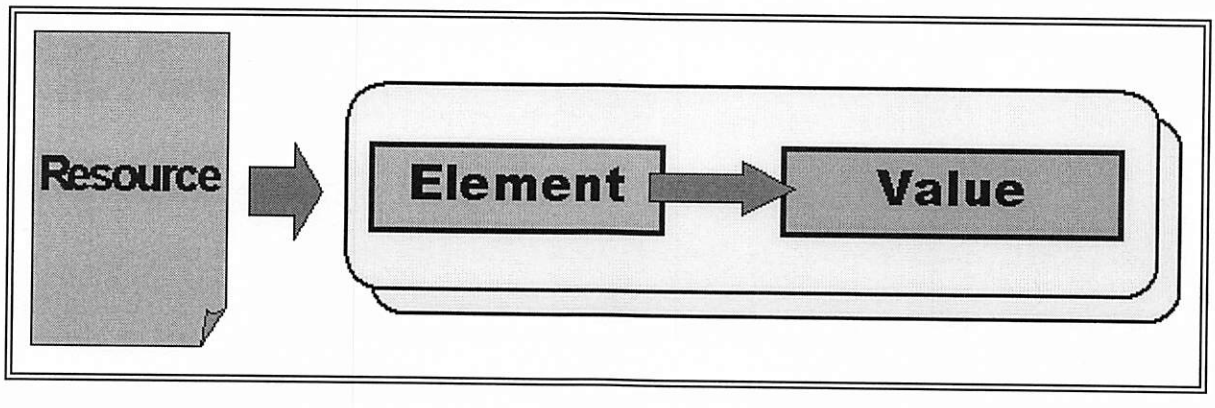
The Dublin Core Reference Model is presented here to provide a consistent view of the functional requirements of Dublin Core versions within and across the Dublin Core community. There will be a number of syntactical mechanisms to interchange Dublin Core metadata - this Reference Model should be consistent across these.

Dublin Core 1.0 Reference Model

The figure below represents the Dublin Core Reference Model for version 1.0. It is a simple model consisting of:

- Resource - the object being described
- Element - a characteristic or property of the Resource
- Value - the literal value corresponding to the Element

For example, an Element would be one of the 15 defined in [RFC 2413], a Value would usually be a text string, and a Resource could be any object that has identity.



Dublin Core 1.0 Reference Model

The Dublin Core 1.0 Reference Model requires that:

- there is a mechanism to associate the Resource with the Metadata (Element/Value combination).
- all elements are repeatable
- all elements are optional

Dublin Core 1.0 Reference Model - Example

```
Element  = Title            Value  = Dublin Core Reference Model
Element  = Creator          Value  = Renato Iannella
Element  = Creator          Value  = Jacky Crystal
Element  = Date             Value  = 1999-04-27
Element  = Subject          Value  = Metadata, Dublin Core
Resource = http://www.dstc.edu.au/RDU/DCAC/NOTE-DCRM-19990504.html
```

Dublin Core 2.0 Reference Model

The figure below represents the Dublin Core Reference Model for Version 2.0. It is a more complex model, yet attempts to be backward-compatible by building on and preserving the Dublin Core 1.0 Reference Model.

The richer semantics of Dublin Core version 2.0 are provided by two *qualification* mechanisms:

- Element Qualifiers - additional attributes that further specify the relationship of the Element to the Resource
- Value Qualifiers - additional attributes that further specify the relationship of the Value to the Element

For the Dublin Core 2.0 Reference Model, there is one Element Qualifier:

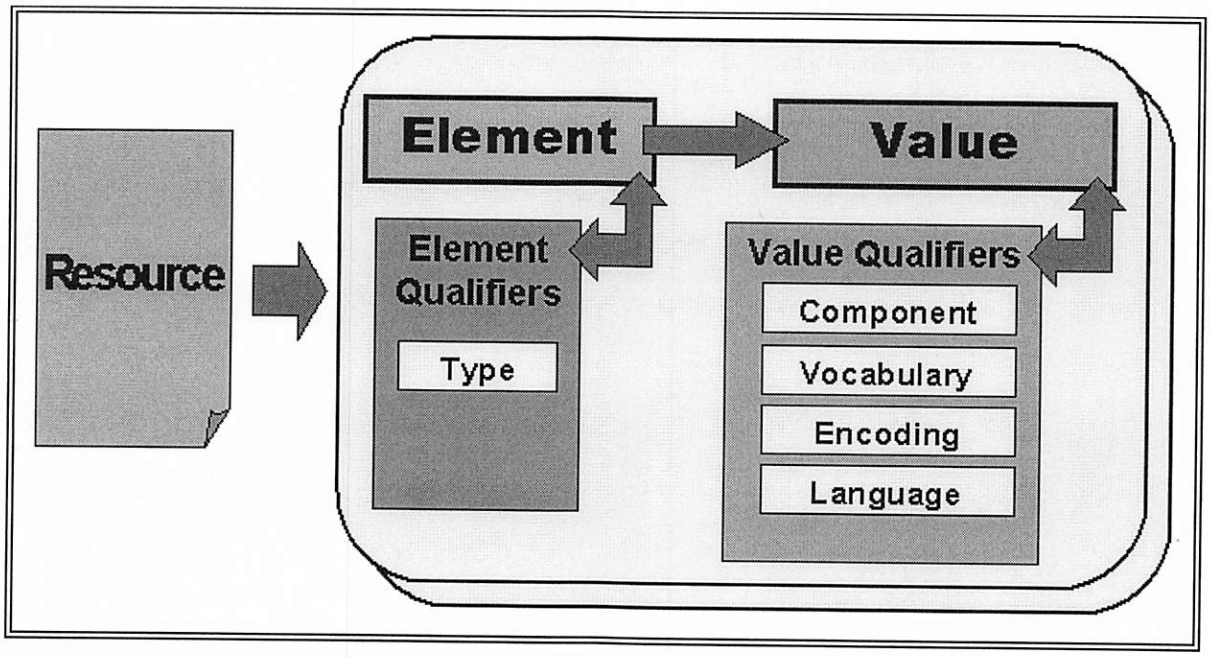
- Type - refines or narrows the semantics of the element and does not stray from the intended element definition

For example, *Modified Date* may be considered a more specific *Type* of the Dublin Core Date element.

For the Dublin Core 2.0 Reference Model, there are four Value Qualifier attributes:

- Component - represents a structural aspect of the element value
- Vocabulary - represents a known vocabulary (or taxonomy, thesaurus, ontology) from where the element value was sourced
- Encoding - represents the encoding scheme of the element value
- Language - represents the language of the element value

For example, Firstname and Lastname can considered *Components* of the name of a person, "Italians-Australia-Ethnic Identity" is a value from the Library of Congress Subject Headings [LCSH]) *Vocabulary*, the [W3C Datetime] specifies the format for *Encoding* dates, and the recommended best practice for *Language* is to use a value from [RFC1766].



Dublin Core 2.0 Reference Model

The Dublin Core 2.0 Reference Model requires that:

- Elements can be grouped together
- The ordering of grouped elements should be preserved (if required)
- If formally specified and maintained, the source of the terms used for the Element Qualifiers and Value Qualifiers should be indicated

Dublin Core 2.0 Reference Model - Example

```
Element   = Title              Value          = Dublin Core Reference Model
                                 Language     = en
                               Value          = Modello Di Riferimento Di Dublin Core
                                 Language     = it

Element   = Creator            Value          = Renato
                                 Component    = Firstname
                               Value          = Iannella
                                 Component    = Lastname
                               Value          = renato@dstc.edu.au
                                 Component    = Email

Element   = Contributor        Value          = fn:Jacky Crystal; org:DSTC
  Type    = Illustrator          Encoding     = vCard

Element   = Date               Value          = 1999-04-15
  Type    = Created              Encoding     = ISO8601
                               Value          = 1999-04-27
  Type    = Modified             Encoding     = ISO8601

Element   = Subject            Value          = Computers -- Metadata
                                 Vocabulary   = LCSH
                               Value          = Standards -- Dublin Core
                                 Vocabulary   = LCSH

Element   = Language         Value          = en
                               Encoding     = RFC1766
```

```
Resource = http://www.dstc.edu.au/RDU/DCAC/NOTE-DCRM-19990504.html
```

Conformance

Proposals for implementations of Dublin Core must indicate the mechanisms used to address the Dublin Core Reference Model requirements presented in this document, and which version it supports. Some implementations may also indicate mechanisms to map or convert between the different Dublin Core Reference Model versions. Recommendations may also be made on how lower version systems handle Dublin Core metadata from a higher version.

Dublin Core implementation proposals should submit their proposals to the DCMI if official conformance is required.

This requirements document may be updated in the future to reflect changes or additional versions of the Dublin Core Reference Model.

Acknowledgements

The work reported in this paper has been funded in part by the Cooperative Research Centres Program, through the Department of the Prime Minister and Cabinet of Australia.

References

[DCMI]
Dublin Core Metadata Initiative. OCLC, Dublin Ohio. http://purl.org/dc/

[LCSH]
Library of Congress (USA) Subject Headings. For information, follow links from http://lcweb.loc.gov/catdir/

[RFC1766]
H. Alvestrand, 1995 *Tags for the Identification of Languages.* http://info.internet.isi.edu/in-notes/rfc/files/rfc1766.txt.

[RFC2413]
S. Weibel, J. Kunze, C. Lagoze, M. Wolf 1998. *Dublin Core Metadata for Resource Discovery.* RFC2413 http://info.internet.isi.edu/in-notes/rfc/files/rfc2413.txt

[W3C Datetime]
Misha Wolf, Charles Wicksteed , 1997 *Date and Time Formats.* W3C Note http://www.w3.org/TR/NOTE-datetime

DUBLIN CORE METADATA INITIATIVE

Proposed Definitions for Dublin Core Version 1.1

Creator: Renato Iannella, Paul Miller (Editors)
Contributor: DC TAC/PAC Members
Publisher: Dublin Core Technical Advisory Committee
Date.Created: 1999-04-07 Date.Modified: 1999-06-02
Identifier: http://www.dstc.edu.au/RDU/DCTAC/version11.html
Status: None

The document summarises the proposed new definitions for the Dublin Core metadata elements - to be known as Version 1.1 - as originally defined in [RFC2413].

The new definitions utilise the ISO11179 [ISO11179] standard for the description of data elements. There are two main advantages for representing the Dublin Core metadata elements with ISO11179. Firstly, ISO11179 is an international standard for formally expressing the semantics of data elements in a consistent manner. This consistency allows for interoperablity not only at the Dublin Core level, but to other communities that utilise ISO11179 for their semantic representation. Secondly, the Dublin Core elements lacked internal consistency. ISO11179 has significantly enhanced the clarity and scope of the Dublin Core element definitions.

Each Dublin Core element is defined using a set of ten attributes from ISO11179. These include:

- **Name** - The label assigned to the data element
- **Identifier** - The unqiue identifier assigned to the data element
- **Version** - The version of the data element
- **Registration Authority** - The entity authorised to register the data element
- **Language** - The language in which the data element is specified
- **Definition** - A statement that clearly represents the concept and esential nature of the data element
- **Obligation** - Indicates if the data element is required to always or sometimes be present (contain a value)
- **Datatype** - Indicates the type of data that can be represented in the value of the data element
- **Maximum Occurrence** - Indicates any limit to the repeatability of the data element
- **Comment** - A remark concerning the application of the data element

Fortunately, six of the above ten ISO11179 attributes are common to all the Dublin Core elements. These are, with their respective values:

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

The above attributes will not be repeated in the below definitions, however, they do represent part

of the formal element definitions.

The definitions provided here include both the conceptual and reprensentational form of the Dublin Core elements. The Definition attribute captures the semantic concept and the Datatype and Comment attributes capture the data representation.

Dublin Core elements describe Resources. A good definition of a Resource can be found in [RFC2396]; *A resource can be anything that has identity. Familiar examples include an electronic document, an image, a service (e.g., "today's weather report for Los Angeles"), and a collection of other resources. Not all resources are network "retrievable"; e.g., human beings, corporations, and bound books in a library can also be considered resources.*

TECHNICAL NOTES:

- Definitions in **BOLD** are to be ratified by the TAC as no WG was formed for their re-definition. But, the proposed defintions DO NOT change the intended purpose of the element and was primaily a re-alignment with ISO11179.
- Definitions in *ITALIC* are TAC recommended changes to the WG proposed definitions.
- Definitions in UNDERLINE are final TAC recommended definitions.

Element: Title

Name: **Title**
Identifier: **Title**
Definition: **A name given to the resource**
Comment: **Typically, a Title will be a name by which the resource is formally known.**

Element: Creator

Name: Creator
Identifier: Creator
Definition: An entity primarily responsible for making the content of the resource
Comment: 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.

Element: Subject

Name: Subject and Keywords
Identifier: Subject
Definition: The topic of the resource

Definition: *The topic of the content of the resource*

Comment: Typically, a Subject will be expressed as keywords, phrases or classmarks that describe the topic of the resource. The use of controlled vocabularies and formal classification schemes is encouraged.

Comment: *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.

Element: Description

Name: Description
Identifier: Description
Definition: An account of the content of the resource
Comment: A Description may include but is not limited to: an abstract, a table of contents, a graphical representation of content, or a free-text account of content.

Comment: Description may include but is not limited to: an abstract, table of contents, refernence to a graphical representation of content or a free-text account of the content.

Element: Publisher

Name: Publisher
Identifier: Publisher
Definition: An entity responsible for making the resource available
Comment: 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.

Element: Contributor

Name: Contributor
Identifier: Contributor
Definition: An entity responsible for making contributions to the content of the resource
Comment: Examples of a Contributor include a person, an organisation, or a service.
Typically, the name of a Contributor should be used to indicate the entity.

Element: Date

Name: Date
Identifier: Date
Definition: A date associated with the creation or availability of the resource.
Comment: Recommended best practice is defined in a profile of ISO 8601 [3] that includes (among others) dates of the forms YYYY and YYYY-MM-DD. In this scheme, for example, the date 1994-11-05 corresponds to November 5, 1994.

Element: Type

Name: Resource Type
Identifier: Type
Definition: Nature or genre of the content of the resource
Comment: Type is used to categorize the nature or genre of the content of the resource. Recommended best practice is to select a value from an enumerated list, and to identify the list being used with the scheme qualification. The content of SCHEME should be a URI of the controlled list. It may be repeated as necessary to include different categories.
To describe the form of the manifestation of the content (medium, MIME type, size, etc.) of the resource, use FORMAT element.

Element: Format

Name: Format
Identifier: Format
Definition: Physical or digital manifestation of the resource
Comment: 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 (for example, the list of Internet Media Types [MIME] defining computer media formats).

Element: Identifier

Name: Resource Identifier
Identifier: Identifier
Definintion: An unambiguous reference to the resource within a given context
Comment: Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system.
Example 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).

Element: Source

Name: Source
Identifier: Source
Definition: An identifier of a resource from which the present resource, in whole or in part, is derived.

Definition: A Reference to a resource from which the present resource is derived

Comment: This definition reconceives of the Source element as type of identifier, namely, an identifier of a source.
The types of allowable identifiers shall be identical to those allowed in the Identifier element.
The unqualifed element expresses a specific relationship between the resource described and the resource identified.

Comment: The Source resource may have been used in part or whole in the present resource.
Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

Element: Language

Name: Language
Identifier: Language
Definition: A Language of the intellectual content of the resource
Comment: Recommended best practice for the values of the Language element is defined by RFC 1766 [RFC1766] which includes a two-letter Language Code (taken from the ISO 639 standard [ISO639]), followed optionally, by a two-letter Country Code (taken from the ISO 3166 standard [ISO3166]).
For example, "en" for English, "fr" for French, or "en-uk" for English used in the United Kingdom

Element: Relation

Name: Relation
Identifier: Relation
Definition: An identifier of a related resource.

Definition: A Reference to a related resource

Comment: This definition reconceives of the Relation element as type of identifier, namely, an identifier of a related resource.
The types of allowable identifiers shall be identical to those allowed in the Identifier element.
The unqualifed element does not express the nature of the relationship.

Comment: The type of relationship between the resources may also be expressed.
Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

Element: Coverage

Name: Coverage
Identifier: Coverage
Definition: The extent or scope of the resource

Definition: Extent or scope of the content of the resource

Comment: Coverage will typically include spatial location (a place name or geographic co-ordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity).
Recommended best practice is that users draw terms from readily available and widely applicable terminologies such as 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 co-ordinates or date ranges.

Comment: Coverage will typically include spatial location (a place name or geographic co-ordinates), 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 co-ordinates or date ranges.

Element: Rights

Name: Rights Management
Identifier: Rights
Definition: Information about rights held in and over the resource
Comment: 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.
```

References

[ISO11179] ISO 11179 - Specification and Standardization of Data Elements, Parts 1-6. <ftp://sdct-sunsrv1.ncsl.nist.gov/x3l8/11179/>

[ISO639] ISO 639 - Codes for the representation of names of languages. <http://www.oasis-open.org/cover/iso639a.html>

[ISO3166] ISO 3166 - Codes for the representation of names of countries. <http://www.oasis-open.org/cover/country3166.html>

[MIME] Internet Media Types. <http://www.isi.edu/in-notes/iana/assignments/media-types/media-types

[RFC1766] Tags for the Identification of Languages, Internet RFC 1766. <http://info.internet.isi.edu/in-notes/rfc/files/rfc1766.txt>

[RFC2396] Uniform Resource Identifiers (URI): Generic Syntax, Internet RFC 2396. <http://info.internet.isi.edu/in-notes/rfc/files/rfc2396.txt

[RFC2413] Dublin Core Metadata for Resource Discovery. Internet RFC 2413. <http://info.internet.isi.edu/in-notes/rfc/files/rfc2413.txt>

[TGN] Getty Thesaurus of Geographic Names. <http://www.gii.getty.edu/tgn_browser>

[W3CDATETIME] Date and Time Formats, W3C Note. <http://www.w3.org/TR/NOTE-datetime>
