History, objectives and approaches of the Dublin Core Metadata Initiative

Tutorial

Dublin Core – Building blocks for interoperability

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DCMI Mission statement

- To provide simple standards to facilitate the finding, sharing and management of information
  - developing and maintaining international standards for describing resources
  - supporting a worldwide community of users and developers
  - promoting widespread use of Dublin Core solutions

DCMI Principles

- *Open consensus building*:
  - open to all at no cost
- *International scope*:
  - experts from 50+ countries
- *Neutrality of purposes and business models*:
  - public and private sectors
- *Neutrality of technology*:
  - focus on semantics, range of implementation technologies
- *Cross-disciplinary focus*:
  - wide range of domains involved

DCMI Activities

- Developing and maintaining standards and related specifications and guidelines
- Supporting communities and task groups to enable community-driven co-operation sharing experience and discussing common solutions
- Reaching out (Web site, news releases, social media, annual conference)

A very brief history

- Objective: create a cross-domain core set of descriptors for the early Web
- Consensus across experts from many domains on a set of 15 “basic” metadata elements for “document-like objects”
- Standardized in ISO 15836 in 2000-2003 (revision 2009)
- Widely deployed solution for basic description and basic exchange (e.g. OAI-PMH)

"Legacy usage"

- Initial 15 core elements are being used in HTML tags and in XML schemas
- Added refinements over the years, e.g. date of creation
- Provides one modest level above HTML <title> and <keywords> tags, and local XML elements like <name> or <author>, adding standard meaning published and maintained by Dublin Core Metadata Initiative (DCMI)

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```
<link rel="schema.DC" href="http://purl.org/dc/elements/1.1/" >
<meta name="DC.title" content="Services to Government" >
```

"Legacy usage"

- Initial 15 core elements are being used in HTML tags and in X
- Added re
- Provides <keywor or <auth maintain

```
<?xml version="1.0"?>
<metadata
  xmlns="http://example.org/myapp/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://example.org/myapp/
http://example.org/myapp/schema.xsd"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:dcterms="http://purl.org/dc/terms/">

  <dc:title>UKOLN</dc:title>
  <dcterms:alternative>
    UK Office for Library and Information Networking
  </dcterms:alternative>
  <dc:subject>metadata</dc:subject>
  <dc:subject xsi:type="dcterms:DDC">062</dc:subject>
  <dcterms:isPartOf
xsi:type="dcterms:URI">http://www.bath.ac.uk/</dcterms:isPartOf>
  <dc:identifier xsi:type="dcterms:URI">http://www.ukoln.ac.uk/</dc:identifier>
  <dcterms:modified xsi:type="dcterms:W3CDTF">2001-07-18</dcterms:modified>
</metadata>
```

"Legacy usage"

- Initial 15 core elements are being used in HTML tags and in X
- Added re
- Provides <keywor or <auth maintain
- "Flat" metadata model

```
<?xml version="1.0"?>
<metadata
  xmlns="http://example.org/myapp/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://example.org/myapp/
http://example.org/myapp/schema.xsd"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:dcterms="http://purl.org/dc/terms/">

  <dc:title>UKOLN</dc:title>
  <dcterms:alternative>
    UK Office for Library and Information Networking
  </dcterms:alternative>
  <dc:subject>metadata</dc:subject>
  <dc:subject xsi:type="dcterms:DDC">062</dc:subject>
  <dcterms:isPartOf
xsi:type="dcterms:URI">http://www.bath.ac.uk/</dcterms:isPartOf>
  <dc:identifier xsi:type="dcterms:URI">http://www.ukoln.ac.uk/</dc:identifier>
  <dcterms:modified xsi:type="dcterms:W3CDTF">2001-07-18</dcterms:modified>
</metadata>
```

Developments since 2000

- Participating in the development of the “new Web”, the Semantic Web and Linked Data
- Approach partly based on early experience with Dublin Core
  - Eric Miller went from Dublin Core to W3C Semantic Web lead
- Resource Description Framework based on the triple “statement”:
  - **Subject – predicate – Object**, or: *Resource-A hasProperty B*
- **Dublin Core is a core vocabulary for RDF predicates**
- Usage in many Semantic Web projects and products, and emerging usage as part of RDFa implementations
- “Building block” metadata model

"Modern" Dublin Core

- Initial Dublin Core (the **dc:** namespace) was intended for use with simple strings as values:
  - **<dc:subject xsi:type="dcterms:DDC">062</dc:subject>**
  - **<dc:subject>Metadata</dc:subject>**
- Modern Dublin Core (the **dcterms:** namespace) defines domains and ranges; e.g. the value of dcterms:subject is the concept not the string – could be a SKOS:Concept:
  - **<dcterms:subject rdf:resource="http://example.org/taxonomy/D003.53"/>**
- This usage is in line with Linked Data approach

"Packaging" metadata "records"

- DC-based statements do not need to be in a "record"; they can occur and be exchanged individually (e.g. in RDFa)
- DCMI Abstract Model describes how metadata statements can be packaged into records or "descriptions" if needed
  - Basic building block: **statement** that says one thing about one resource
  - A **description** contains one or more statements about one and only one resource (using DC and other vocabularies)
  - A **description set** may contain additional descriptions of related resources (e.g. whole/parts, photograph/photographer)
- Dublin Core Application Profiles use Description Set Profiles to express rules and constraints on these "records"

Summary

- "Legacy" usage (incl. "Simple DC"): simple applications using HTML or XML, providing "informal interoperability", mostly for human understanding or simple indexing
  - widely used: OAI-PMH, document management systems, embedded in devices, Web pages etc. etc.
- "Modern" usage (DCMI Terms): semantic applications using RDF, providing "formal interoperability" for machine-processing in Linked Data environments
  - **DCMI metadata terms** are widely used in SemWeb and Linked Data applications and in RDFa experiments, e.g. at major search engines, in conjunction with other Semantic Web vocabularies

First steps

- In October 1994, informal discussion at second WWW Conference, Chicago
- Identified a need for a “core” set of descriptors to help discover content on the Web
- 1-3 March 1995, OCLC/NCSA workshop in Dublin, Ohio at OCLC Headquarters

Dublin Core: the original idea

- A basic description mechanism for digital information that:
  - can be used in all domains
  - can be used for any type of resource
  - is simple, yet powerful
  - can be extended and can work with specific solutions
- Making it easier to find information on the Web as it develops (1995!)

Progress of Dublin Core

- Participation from many sectors (libraries, research, governments, companies) and many countries (more than 50)
- Widely used
- Since 1995, workshops and conferences in USA, UK, Australia, Finland, Germany, Japan, Italy, China, Spain, Mexico, Singapore, Korea

Standardisation

- 1998: Dublin Core Element Set version 1.0
- 1998: Internet RFC2413
- 1999: Dublin Core Element Set version 1.1
- 2000: European Recommendation: CEN CWA 13874
- 2001 (rev. 2007): US National Standard: NISO Z39.85
- 2003 (rev. 2009): International standard: ISO 15836
- 2007: Internet RFC5013

DCMI Products

- Documentation http://dublincore.org/specifications/
  - Semantic recommendations
  - User guidelines
  - Model-related specifications
  - Syntax guidelines
- Community platforms http://dublincore.org/groups/
- Annual conference http://dublincore.org/workshops/

DCMI Work structure

- DCMI Communities
  - bringing together people around specific topics or use of Dublin Core in a particular domain.
- DCMI Task Groups
  - working towards a specific set of deliverables
- DCMI Architecture Forum
  - providing a platform for technical discussions related to practical deployment (XML, RDF, (X)HTML)

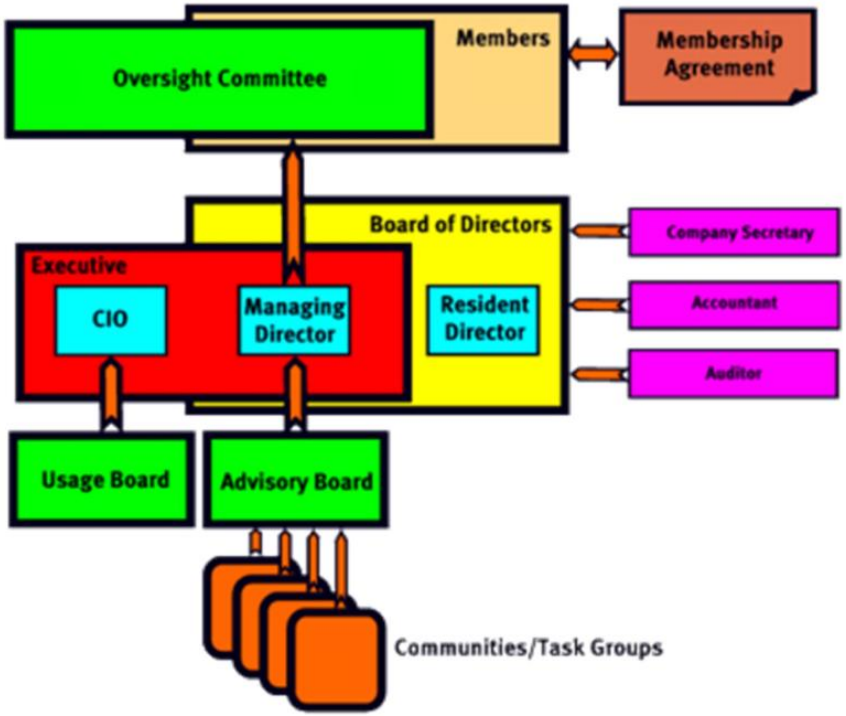
DCMI Legal Structure

- Not-for-profit “Company limited by Guarantee” incorporate in Singapore, December 2008
- Hosted by the National Library Board Singapore
- DCMI Board of Directors: legal signatories
  - Makx Dekkers, Raju Buddharaju
- DCMI Executive: activity management
  - Makx Dekkers (CEO), Tom Baker (CIO)

DCMI Governance

- DCMI Oversight Committee
  - organizational, financial, strategic oversight
- DCMI Advisory Board
  - technical and strategic advice from community moderators, task group leaders, other experts
- DCMI Usage Board
  - maintenance of the Dublin Core standards and review of community proposals

DCMI Organization Chart



DCMI supporters

- DCMI Members:
  - National Library of Korea, National Library of Finland, National Library Board Singapore, JISC (UK), Gov. Of New Zealand
- DCMI Partners:
  - Infocom Corporation (Japan), Fondazione Rinascimento Digitale (Italy)
- Global community of experts and implementers

Highlights

- Dublin Core development started by informal group of interested volunteers in 1995
- From 1999, DCMI provided more formal structures for cooperation, hosted by OCLC
- Incorporated in Singapore, December 2008
- Continuing to serve as an open platform for a global community of metadata experts and users