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Workshop B:
Application Profiles

Canadian Metadata Forum

September 28, 2005

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Workshop Overview

- What is a metadata application profile?
- Creating and using metadata application profiles
- Government of Canada evolving thinking on metadata application profiles
- Maintenance issues
- Conclusions
- It's your turn

What Is a Metadata Application Profile?

- Context: metadata-related definitions
- Characteristics of a metadata application profile
- Purposes
- APs and DCAPs

Metadata Element Definitions

- DCMI: "An element is a property of a resource. As intended here, "properties" are attributes of resources -- characteristics of a resource, such as a Title, Publisher, or Subject. Elements are formally defined terms which are used to describe attributes and properties of a resource."

- ISO 11179: "Data that defines and describes other data."

Metadata Element Definitions /2

- Composed of:

  Name = Value

- Examples:

  Title   Life of Pi

  Publisher   Random House

  Language   English

Metadata Element Set Definition

- Government of Canada: "A collection of metadata elements."
- Examples:
  - Dublin Core Metadata Element Set (DCMES)
  - IEEE Learning Object Metadata (LOM)
  - Global Locator Information Service (GILS)

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Metadata Application Profile Definitions

- Rachel Heery (UKOLN): "Application profiles consist of data elements drawn from one or more namespace schemas combined together by implementers and optimised for a particular local application."

- DCMI: "A set of metadata elements, policies, and guidelines defined for a particular application. The elements may be from one or more element sets, thus allowing a given application to meet its functional requirements by using metadata from several element sets including locally defined sets. […]"

Metadata Application Profile Characteristics

An application profile:

- May draw on one or more existing sets;
- Is meant to meet local needs;
- Cannot introduce new data elements;
- May specify permitted schemes and values; and
- Can refine standard definitions.*

(Source: Heery)

*warning

Why Create a Metadata Application Profile?

- "It is rare that requirements of a particular project or site can all be met by any one standard 'straight from the box.'" (Source: Baker)

- No "one size fits all" standard:
  – Different starting points
  – Different functional requirements
  – Different levels of granularity for different things
  – Different views of reality (Source: Hillman)

APs and DCAPs

- Dublin Core Application Profiles (DCAPs) are simply metadata application profiles that borrow one or more elements from the Dublin Core Metadata Element Set.

- Not all APs are DCAPs.

- CanCore is an AP of the LOM.

- A DCAP is designed to promote interoperability within the constraints of the Dublin Core model.

- Challenges to mix elements from different elements sets with different abstract models.

  (Source: Hillman, Heery and CEN)

Creating and Using
Metadata Application Profiles

- Types and components

- Influences on development

- Best practices for creating elements, encoding schemes, syntax schemes

- Interoperability issues

Types of
Metadata Application Profiles

- Application profiles can be expressed in:
  - Human-readable form (most common)
  - Machine-readable form
- Types differ in:
  - Format of presentation
  - Content
  - Usage

Components of a Metadata Application Profile

- Identification and definition of the:
  - application profile itself
  - elements and element refinements
  - encoding schemes (a.k.a. value domains, permissible values)
- Usage guidelines*

* Optional

Metadata Application Profile Attributes

- ## Identifying
  - Term URI, Name, Label, Defined By
- ## Definitional
  - Definition, Comment, Type of Term
- ## Relational
  - Refines, Refined by, Encoding Scheme For, Has Encoding Scheme, Similar to
- ## Conditions of Application
  - Obligation, Condition, Datatype, Occurrence
    (Source: CEN)

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Example:

Term URI	http://purl.org/dc/elements/1.1/creator
Name	Creator
Label	Creator
Defined by	http://purl.org/dc/elements/1.1/
Definition	An entity primarily responsible for making the content of the resource.
Comment	Where the Government of Canada is the creator, include, at a minimum, the government department or agency responsible for the content of the information resource….
Type of term	Element
Refined by	-
Has encoding scheme	For names within the Government of Canada, use: Titles of Federal Organizations; Government Electronic Directory Service (GEDS)
Obligation	Mandatory
Datatype	String
Occurence	Repeatable

Functions of a Metadata Application Profile

- Document metadata properties and other terms;

- Provide usage information;

- Enable re-use of metadata;

- Encourage the creation of interoperable metadata applications; and

- Promote the development of best practices and standards for metadata.

Some Influences on the Development of a Metadata AP

- Business requirements
- Audience
- Creator's perspective
- Existing standards, guidelines

Best Practices for Choosing Metadata Elements / Schemes

1. Define your requirements.

2. Use elements from existing standards;* use existing encoding schemes,* syntax schemes.

3. If nothing suitable:

    i. Borrow from other implementations.*

    ii. Create your own, according to standards.

(*Note warning on next slide)

Interoperability Warning

When looking at other metadata element sets and encoding schemes, consider:

– Context

– Structure

– Semantic equivalency

Other Interoperability Choices
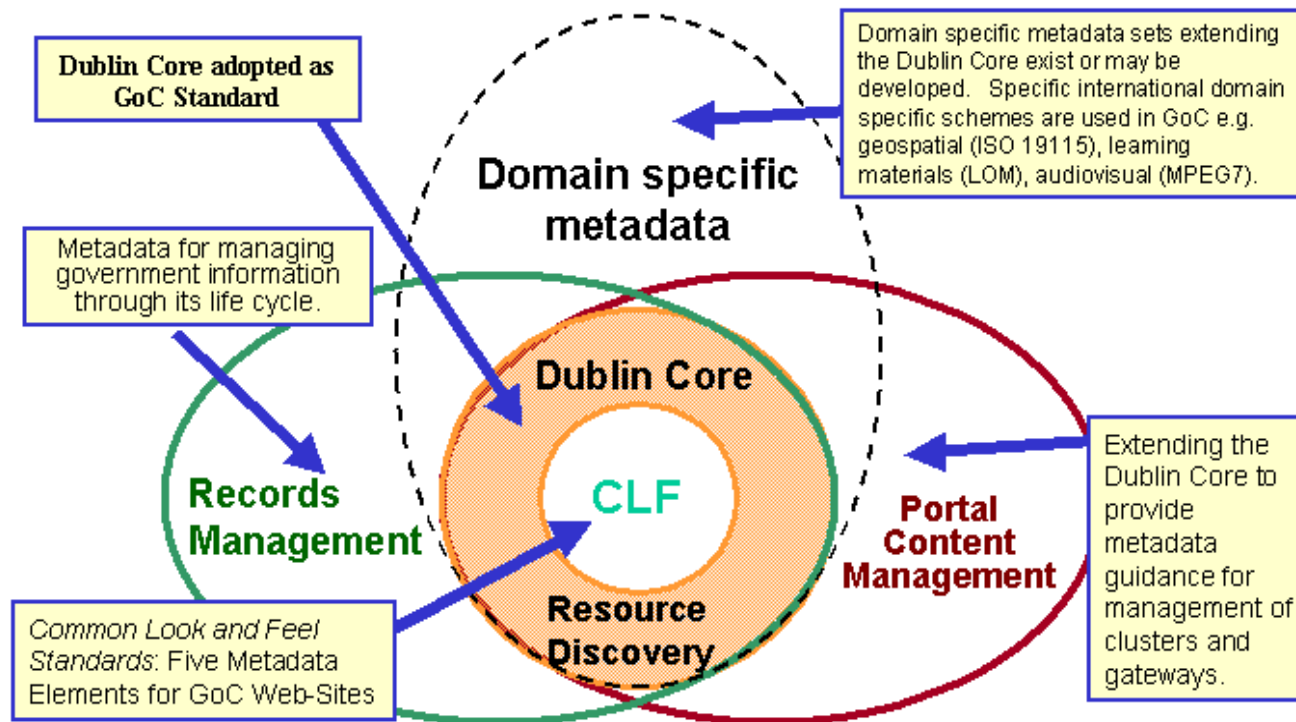
- Crosswalks/Mapping

GC Evolving Thinking on Metadata Application Profiles

- Warning: Evolving Thinking!
- TBITS 39.1: Adoption of the Dublin Core as GC core metadata standard for resource discovery.
- Need for a DCAP to meet GC needs…
  - Mandatory elements:

    DC:Title / DC:Creator / DC:Date / DC:Language / DC:Subject.

  - Value constraints:

    DC:Creator / DC:Date / DC:Language / DC:Subject / DC:Coverage / DC:Type / DC:Format / DC:Audience.

GC Evolving Thinking on Metadata Application Profiles /2

Government of Canada Metadata Framework

Dublin Core adopted as GoC Standard

Domain specific metadata sets extending the Dublin Core exist or may be developed. Specific international domain specific schemes are used in GoC e.g. geospatial (ISO 19115), learning materials (LOM), audiovisual (MPEG7).

Domain specific metadata

Metadata for managing government information through its life cycle.

Dublin Core

Records Management

CLF

Portal Content Management

Resource Discovery

Common Look and Feel Standards: Five Metadata Elements for GoC Web-Sites

Extending the Dublin Core to provide metadata guidance for management of clusters and gateways.

GC Evolving Thinking on Metadata Application Profiles /3

- No easy answer to our problems!

- No single, master or even shared (DC)AP.

- Pressure to align metadata developments with a wider business architecture for the GC and exploration of ISO 11179 as an approach for constructing metadata elements: 3 layers

  1. **Semantic interoperability layer**: Concepts for elements are defined according to business needs, elements are defined using the ISO 11179-3 attributes or are selected from existing (standardized) element sets.

  2. **Business interoperability layer**: Relationships between elements are established.

  3. **Application layer**: An application profile is developed by adding business rules or constraints.

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GC Evolving Thinking on Metadata Application Profiles /4

- What do you borrow:
  - The semantic of the element;
  - Its relationship to the other elements within the element set;
  - The constraints assigned to it?
- Borrow from the first layer (element set).
- Our guidance to federal departments and agencies is still evolving, but we will likely provide advice on how to define elements and build APs, so that all use a common standard (ISO 11179) and methodology.

Maintenance Issues

- Using namespaces
- "Publishing" a metadata application profile
- Managing a metadata application profile
- Using a metadata registry

XML Namespace

- An XML namespace is a collection of names, identified by a URI reference, that are used in XML documents as element types and attribute names.

  (Source: DCMI Glossary)

Role of a Namespace

A namespace can:

- Identify the management authority for an element set;

- Support the definition of unique identifiers for elements; and

- Uniquely define particular data element sets or vocabularies.

(Source: Heery)

"Publishing" a Metadata Application Profile

Making a metadata application profile publicly available:

- Provides information about the application profile and promotes its use;

- Presents an authoritative version; and

- Indicates the proper use of the namespace(s).

Managing a Metadata Application Profile

This includes defining and documenting:

- Responsibility for maintenance
- A review and update process
- Version control
- Contact information

Using a Metadata Registry

- A metadata registry can be used to manage metadata elements, encoding schemes, and concepts associated with them.

- ISO 11179 provides standards and guidelines for managing metadata in a registry.

Conclusions

Metadata-related challenges:

- Maturity of the technology
- Maturity of the organizations
- Maturity of the thinking within the metadata community

- ✓ Keep going!
- ✓ Share!
- ✓ Push!

Conclusions /2

GC-related challenges:

- Lack of common understanding and approach;
  - ✓Communicate!
  - ✓Participate in working groups!
  - ✓Test case!
- Language requirements;
  - ✓Be aware!
  - ✓Work in both languages in parallel!

Conclusions /3

- Return on investment (ROI);
  - ✓ Advocate for!
  - ✓ Explain and prove!
- Pressure to align metadata with enterprise architecture (EA);
  - ✓ Collaborate with EASD!
  - ✓ Go back to school!
- Limitations of DC to meet our needs.
  - ✓ Join committees and be part if the solution!

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It's Your Turn

- Questions
- Information Exchange

For Further Information

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