



Metadata Application Profiles as Tools to Promote Interoperability: The Government of Canada Experience

Managing Government Information
4th Annual Forum
February 28, 2006



Presentation Overview

- Metadata Definitions
- Government of Canada (GC) Evolving Thinking on Interoperability
- Metadata Application Profiles (MAP)
 - Definition
 - Functions
 - Forms
- Issues and Challenges... and Proposed Solutions



Definitions

- Metadata: Structured information about the content of a resource.
 - Example: a label on a can.
- Metadata element: Used to describe a property or a characteristic of a resource.
 - Example: a title.



Metadata Element

- A metadata element is composed of:

Name = Value

- Example:

Title Life of Pi

- Expressed in HTML as a Dublin Core element:

```
<meta name="dc.title" content="Life of Pi">
```

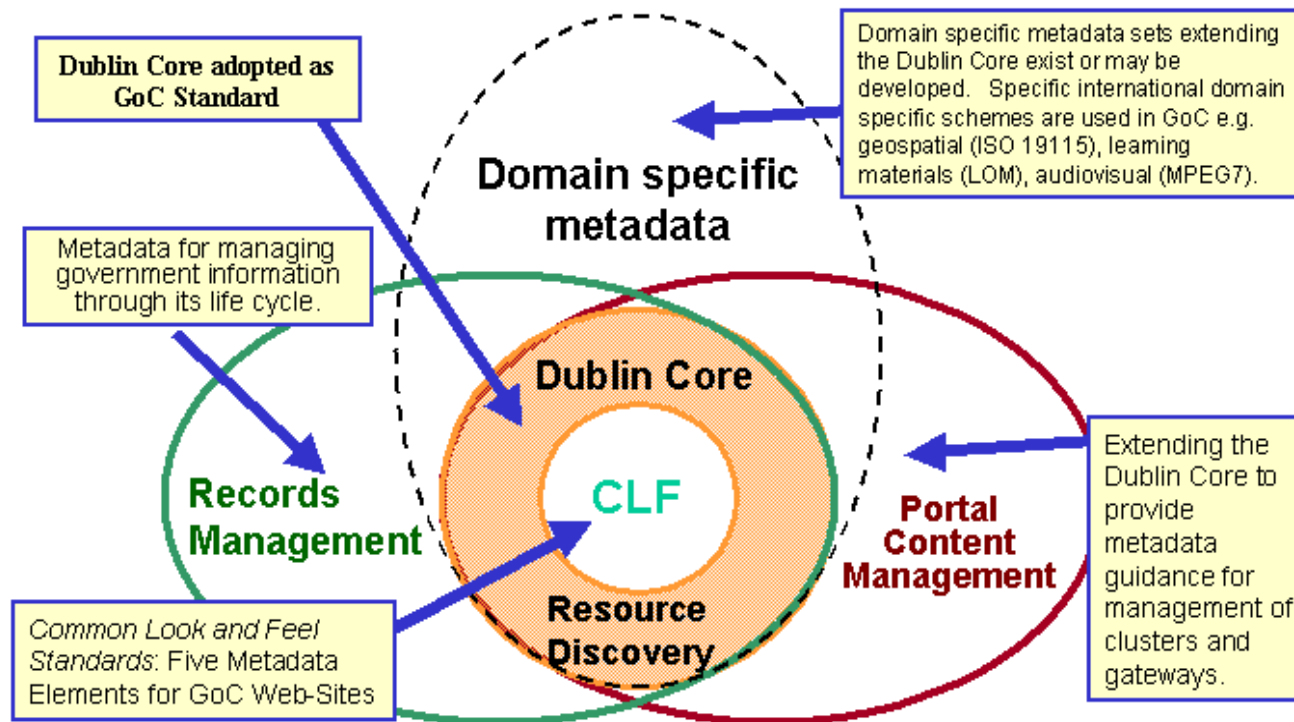


Metadata Element Set

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

An Initial View of Interoperability

Government of Canada Metadata Framework





GC Evolving Thinking on Interoperability

- Initial work:
 - Adoption of the Dublin Core as the GC core metadata standard (TBITS 39.1);
 - 5 mandatory elements (CLF 6.3).
- Evolution:
 - From a base set common to all domains...
 - to a common set for resource discovery...
 - to guidance on developing elements and a MAP.



Layers of Interoperability /1

- **Semantic interoperability layer**
 - Define **metadata concepts** according to business needs;
 - Create elements.



Layers of Interoperability /2

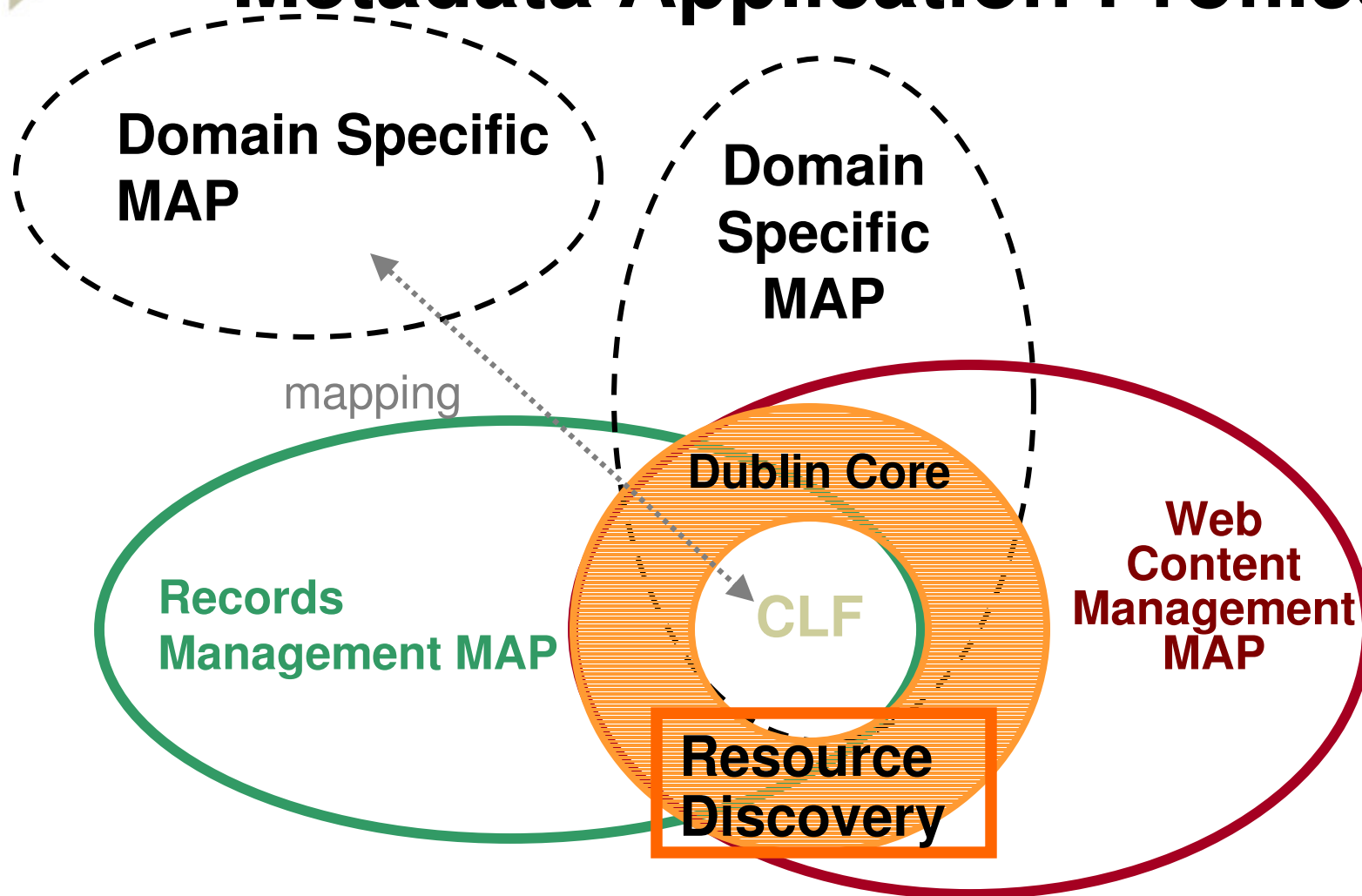
- **Business interoperability layer**
 - Draw elements from one or more element sets;
 - Establish relationships between elements;
 - Define business rules or constraints on the values;
 - Record in a **metadata application profile**.



Layers of Interoperability /3

- **Technical interoperability layer**
 - **Metadata implementation** in a specific, local solution.

New View of Interoperability and Metadata Application Profiles





Standards Versus Application Needs

- “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)



Metadata Application Profile: Definition

A metadata application profile includes:

- Elements from one or more element sets (including locally defined elements), combined and optimized for an application;
- Value sets and/or schema references;
- Policies, guidelines, and/or usage information.



Functions of a Metadata Application Profile

- Meets local needs by allowing customization;
- Encourages the creation of interoperable metadata implementations by enabling the re-use of metadata elements;
- Promotes the development and use of standards and best practices.



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.

Example of a Human-readable Metadata Application Profile

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
Occurrence	Repeatable

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Publication

Issue: To promote interoperability, metadata decisions must be documented.

Solutions:

- XML Namespace
 - A precise and unique machine-readable reference (using a URI) to an element set, encoding schemes, or an application profile.
- Publishing the metadata application profile
 - Provides authoritative information about the application profile and promotes its use.



Management

Issue: The application profile must be managed.

Solutions:

- Governance
 - Determine responsibilities, roles, processes, etc.
- 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.



An Evolving Discipline

Issue: Maturity of the technology, organizations, and thinking within the metadata community.

Solutions:

- Research, contribute to development;
- Develop test cases;
- Share lessons learned, best practices.



Implementation in the GC

Issues:

- Lack of common understanding and approach;
- Return on investment (ROI);
- Pressure to align with enterprise architecture;
- Language requirements;
- Limitations of DC to meet our needs.

Solutions:

- Communicate;
- Collaborate;
- Take an enterprise approach;
- Tackle issues.



For Further Information

Please contact us:

Marie-Claude Côté

Cote.Marie-Claude@tbs-sct.gc.ca

Margaret Devey

Devey.Margaret@tbs-sct.gc.ca

Visit our Web site:

http://www.tbs-sct.gc.ca/im-gi/meta/meta-cdn_e.asp





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Documents on application profiles

Baker et al. “What Terms Does Your Metadata Use? Application Profiles as Machine-Understandable Narratives”. *Journal of Digital Information (JoDI)*, Volume 2, Issue 2, November 6, 2001.

URL: <http://jodi.ecs.soton.ac.uk/Articles/v02/i02/Baker/>

Dekkers, Makx. “Application Profiles, or How to Mix and Match Metadata Schemas”. *Culture Interactive*, Issue 3, Number 29, January 2001.

URL: <http://www.cultivate-int.org/issue3/schemas/>

European Committee on Standardization. *Dublin Core Application Profile Guidelines*. Brussels: CEN, 2003. CWA 14855: 2003 D/E/F.

URL: <ftp://ftp.cenorm.be/PUBLIC/CWAs/e-Europe/MMI-DC/cwa14855-00-2003-Nov.pdf>

Heery, Rachel and Manjula Patel. “Application profiles: mixing and matching metadata schemas”. *Ariadne*, Issue 25, September 24, 2000.

URL: <http://www.ariadne.ac.uk/issue25/app-profiles/intro.html>





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Course

Hillman, Diane. “Building Metadata Application Profiles”. Course, Electronic Text Centre at the University of New Brunswick. August 4-5, 2005

URL: To be published at: http://www.lib.unb.ca/Texts/SGML_course/2005/

Application profiles

Australian Government Locator Service (AGLS)

URL: http://www.naa.gov.au/recordkeeping/gov_online/agls/summary.html

CanCore

URL: <http://www.cancore.ca/>

Metadata Object Description Scheme (MODS)

URL: <http://www.loc.gov/standards/mods/>





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Element Sets

Dublin Core Metadata Element Set (DCMES)

URL: <http://www.dublincore.org/documents/dces/>

Global Information Locator Service (GILS)

URL: <http://www.gils.net/>

IEEE Learning Object Metadata (LOM)

URL: <http://ltsc.ieee.org/wg12/>

Standard

International Organization on Standards. *Metadata Registries: Part 3, Registry Metamodel and Basic Attributes*. Geneva: ISO, 2003. ISO/IEC 11179-3:2003

URL: <http://metadata-standards.org/>





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Government of Canada Documents

Common Look and Feel Metadata Standard

URL: http://www.tbs-sct.gc.ca/clf-nsi/inter/inter-06-03_e.asp

Government of Canada Metadata Framework

URL: http://www.tbs-sct.gc.ca/im-gi/meta/frame-cadre_e.asp

Government of Canada Metadata Guidance

URL: http://www.tbs-sct.gc.ca/im-gi/meta/meta-cdn_e.asp

Information Management Resource Centre – Metadata

URL: http://www.tbs-sct.gc.ca/im-gi/meta/meta_e.asp

Treasury Board Information Management Standard (TBITS) 39

URL: http://www.tbs-sct.gc.ca/its-nit/standards/tbits39/crit39_e.asp





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Glossaries

Dublin Core Metadata Initiative Glossary

URL: <http://www.dublincore.org/documents/usageguide/glossary.shtml>

Information Management Glossary

URL: http://www.tbs-sct.gc.ca/im-gi/glossary/glossary_e.asp





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