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# **INTRODUCTION TO METADATA FOR DECISION-MAKERS**

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## Briefing Background, Acknowledgements, and Contact Information

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This briefing and all related materials are the direct result of a two-year grant to the State Archives Department of the Minnesota Historical Society (MHS) from the National Historical Publications and Records Commission (NHPRC). Work on the “Educating Archivists and Their Constituencies” project began in January 2001 and was completed in May 2003.

The project sought to address a critical responsibility that archives have discovered in their work with electronic records: the persistent need to educate a variety of constituencies about the principles, products, and resources necessary to implement archival considerations in the application of information technology to government functions. Several other goals were also supported:

- raising the level of knowledge and understanding of essential electronic records skills and tools among archivists,
- helping archivists reach the electronic records creators who are their key constituencies,
- providing the means to form with those constituencies communities of learning that will support and sustain collaboration, and
- raising the profile of archivists in their own organizations and promoting their involvement in the design and analysis of recordkeeping systems.

MHS administered the project and worked in collaboration with several partners: the Delaware Public Archives, the Indiana University Archives, the Ohio Historical Society, the San Diego Supercomputer Center, the Smithsonian Institution Archives, and the State of Kentucky. This list represents a variety of institutions, records environments, constituencies, needs, and levels of electronic records expertise. At MHS, Robert Horton served as the Project Director, Shawn Rounds as the Project Manager, and Jennifer Johnson as the Project Archivist.

MHS gratefully acknowledges the contribution of Advanced Strategies, Inc. (ASI) of Atlanta, Georgia, and Saint Paul, Minnesota, which specializes in a user-centric approach to all aspects of information technology planning and implementation. MHS project staff received training and guidance from ASI in adult education strategies and workshop development. The format of this course book is directly based on the design used by ASI in its own classes. For more information about ASI, visit <http://www.advstr.com/>

For more information regarding the briefing, contact MHS staff or visit the briefing web site at <http://www.mnhs.org/preserve/records/workshops/edarchivists.html>

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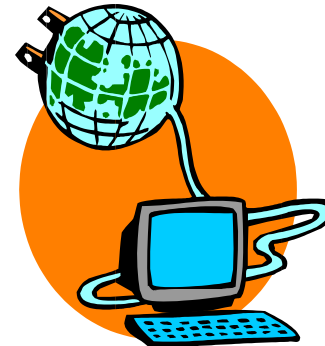
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# Introduction to Metadata for Decision-Makers

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**This briefing includes:**

- Briefing objectives.
- What do we mean by information resources, digital objects, and electronic records?
- Definitions of metadata.
- Why is metadata useful?
- Systems management metadata.
- Access metadata.
- Recordkeeping metadata.
- Preservation metadata.
- Putting it all together.



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# Introduction to Metadata for Decision-Makers

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## Briefing objectives

Upon completion of this briefing, you will be able to:

- understand what is meant by digital objects and electronic records
- understand the definition of metadata
- discuss what metadata may be needed for digital objects
- describe different functions of metadata
- discuss systems management, access, recordkeeping, and preservation metadata functions and some example standards

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## What do we mean by information resources, digital objects, and electronic records?

Information resources: The content of your information technology projects (data, information, records, images, digital objects, etc.)

Digital object: Information that is inscribed on a tangible medium or that is stored in an electronic or other medium and is retrievable in perceivable form. An object created, generated, sent, communicated, received, or stored by electronic means.<sup>1</sup>

An electronic record is a specific type of digital object with unique characteristics described by archivists and records managers.

Types of digital objects:

- e-mail
- web pages
- databases
- spreadsheets
- word processing documents
- Portable Document Format (PDF) files
- PowerPoint presentations
- digital images
- ...and many more

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<sup>1</sup> Electronic Signatures in Global and National Commerce Act (E-Sign). <http://thomas.loc.gov/cgi-bin/query/z?c106:S.761>:

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**Digital objects have three components:**

Content: Informational substance of the object.

Structure: Technical characteristics of the objects (e.g., presentation, appearance, display).

Context: Information outside the object which provides illumination or understanding about it, or assigns meaning to it.

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## Defining information objects

### Pittsburgh Project Definition

Content  
Structure  
Context

### Order of Values

Data  
Information  
Knowledge

### Information Technology Architecture

Data  
Format  
Application



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**Exercise: What do you think metadata is?**

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**Different people and professions have different definitions of metadata**

- data about data
- information about information
- data about objects
- descriptive information which facilitates management of, and access to, other information
- evaluation tool

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## Different people and professions use metadata to fulfill different functions

Description: what is in the object, what the object is about

Discovery: the location of the object

Evaluation: the value of the object, is this the object I want to use

Management: control of the access, storage, preservation, and disposal of an object

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## Why is metadata useful?

Everyone needs metadata to help manage and use digital objects. Collaboration with partners and stakeholders is crucial to ensure that everyone's requirements are met and that efforts are coordinated.

Metadata helps with:

- Legal discovery and admissibility issues
- Data access requirements
- Data management tasks such as:
  - knowing who created, modified, and accessed a file over time (reliability)
  - determining ownership
  - finding files
  - version control
  - tracking hardware and software requirements
  - planning for migration and conversion
  - implementing retention schedules

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## Primary and secondary uses of data requires metadata

Primary use: Why you create or use data.

Secondary use: When anyone else wants to use the data.

Metadata makes re-use possible. Metadata standards allow for more consistent and efficient description, discovery, evaluation, and management.

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## Different metadata standards serve different functions <sup>2</sup>

- Data Modeling metadata: a graphic representation of a process or system (metadata). Data models graphically capture and record business decisions, facilitate planning, and offer a means of understanding information relationships, structures, and processes. Models range from conceptual to physical (What is actually needed to implement the system).
- Systems management metadata: metadata for structured data like that in a database or data warehouse.
- Recordkeeping metadata: information that facilitates both management of, and access to, records.
- Access metadata: information that facilitates the search for, access to, and use of digital objects.
- Preservation metadata: metadata used for carrying out, documenting, and evaluating the processes that support the long-term retention and accessibility of digital content.
- GIS (Geographic Information System) metadata: combines aspects of data administration, recordkeeping, access, and preservation functions with application to geospatial data.

Standards have some points of commonality because there is a basic core of information that is needed for all digital objects. There are also points of difference, since each was created to support a particular function.

Crosswalking, or mapping, allows you to move between different metadata standards with points of commonality. <sup>3</sup>

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<sup>2</sup> See Appendix C for more information on these metadata standards.

<sup>3</sup> See Appendix A for more information on Crosswalks.

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## What is systems management metadata?

- Necessary for day-to-day system functions
- Associated with data administration, databases, data warehouses
- Examples include field size, allowable values
- Users include systems analysts, data administrators, business analysts, software developers, planners, and auditors

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## Systems management metadata (continued)

*Specification and Standardization of Data Elements*. ISO/IEC 11179, Final draft international standard. <sup>4</sup>

ISO/IEC 11179: *Metadata Registries* (2001 draft revisions)

Part 1: Framework for the Specification and Standardization of Data Elements <sup>5</sup>

Part 2: Classification for Data Elements

Part 3: Basic Attributes of Data Elements (Registry Metamodel) <sup>6</sup>

Part 4: Rules and Guidelines for the Formulation of Data Definitions

Part 5: Naming and Identification Principles for Data Elements <sup>7</sup>

Part 6: Registration of Data Elements

Purpose of standard: “to give concrete guidance on the formulation and maintenance of discrete data element descriptions and semantic content (metadata) that shall be used to formulate data elements in a consistent, standard manner. It also provides guidance for establishing a data element registry.”

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<sup>4</sup> <http://pueblo.lbl.gov/~olken/X3L8/drafts/draft.docs.html>

<sup>5</sup> <http://xw2k.sdct.itl.nist.gov/L8/document-library/projects/11179-revision/> for Parts 1-2, 4, and 6. Look for latest versions in sub-directories

<sup>6</sup> <http://www.jtc1sc32.org/sc32/jtc1sc32.nsf/DocView750?OpenView&Count=125> Choose document #643 – Part 3 FCD. Download 32N0643T.PDF

<sup>7</sup> <http://www.jtc1sc32.org/sc32/jtc1sc32.nsf/DocView750?OpenView&Count=125> Choose Document #657 – Part 5 WD. Download 32N0657.PDF

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## Systems management metadata (continued)

Useful for data warehouses

What is a data warehouse? <sup>8</sup>

“Data warehouses are computer based information systems that are home for "secondhand" data that originated from either other applications and/or from external systems or sources. Warehouses optimize database query and reporting tools because of their ability to analyze data, often from disparate databases and in interesting ways. They are a way for managers and decision makers to extract information quickly and easily in order to answer questions about their business. In other words, data warehouses are read-only, integrated databases designed to answer comparative and "what if" questions. Unlike operational databases that are set up to handle transactions and that are kept up to date as of the last transaction, data warehouses are analytical, subject-oriented and are structured to aggregate transactions as a snapshot in time.”

- This metadata helps you evaluate data and answer the following questions:
  - o What's the source of the data?
  - o Has the data recently been cleansed, or transformed?
  - o Is this data appropriate for my needs?

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<sup>8</sup> Minnesota Historical Society, State Archives Department, Data Warehouses. <http://www.mnhs.org/preserve/records/datawarehouses.html>

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## Systems management metadata example no. 1

REPORT: ehmnt.rpt  
 REVISION: 0999A

*STATE OF MINNESOTA  
 DEPT OF FINANCE, Mn-ASSIST, INFORMATION ACCESS  
 WAREHOUSE DATA ELEMENT INFORMATION*

DATE: 4/19/02  
 TIME: 4/19/02  
 PAGE: 1

ELMT SOL NM	ELEMENT DESCRIPTION	ELEMENT VALUES	LGTH	ELMT TYPE	TABLE OR VIEW NAME
AA_GOAL_UNIT_NBR	Number which identifies an agency or subdivision of an agency for the purpose of setting affirmative action goals. See also, "Aff Action Plan ID."		3	CHAR(3)	HR_CUR_RPTNG HR_JOB_INFO_CUR HR_JOB_INFO_TRANS HR_JOB_SW_CUR HR_JOB_SW_TRANS T_HR_JOB_INFO_CUR T_HR_JOB_INFO_TRANS
ACCEPTANCE_DT	Date a document updates the financial files and ledgers.		4	DATE	BAL_SHEET_TRANS BAL_SHEET_TRANS_HIST BUDGET_TRANS COLLECTION_LEDG ENCUMBRANCE EXPENDITURES REVENUE T_BAL_SHEET_TRANS T_BAL_SHEET_TRANS_HIST T_BUDGET_TRANS T_COLLECTION_LEDG T_ENCUMBRANCE T_EXPENDITURES T_REVENUE
ACCMDTN_REQ_INDC	Indicator which shows if the student requested accommodations.		1	CHAR(1)	TRNG_PARTICIPANT T_TRNG_PARTICIPANT
ACCT_PAYBL_CNIC_NM	Name of the contact in the customer's accounts payable department.		30	VARCHAR2(30)	CUSTOMER T_CUSTOMER
ACCT_PAYBL_PHONE_NBR	Phone number for the accounts payable contact.		15	VARCHAR2(15)	CUSTOMER T_CUSTOMER

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## Systems management metadata example no. 2

REPORT: tablnfo.rpt

REVISION: 0999A

*STATE OF MINNESOTA*

*DEPT OF FINANCE, Mn-ASSIST, INFORMATION ACCESS*

*WAREHOUSE TABLE INFORMATION*

DATE: 4/19/02

TIME: 2:34:02PM

PAGE: 1

TABLE OWNER NM = QWHAP

TABLE NAME	TABLE DESCRIPTION	UPDATE FREQUENCY	NBR ROWS	LAST UPDATE DATE / TIME	EXTRACT PROCEDURE	LOAD PROCEDURE
T_ACTIVITY	Activity Table, defines valid codes for activity.	Daily, normally Monday thru Friday evening after GFS batch processing. Can run on Saturday. Not run on Holidays. All data replaced each day.	66,957	4/18/02 11:26:36PM	FTWH0901	
T_AGENCY	Agency Table, defines valid agency codes in the accounting system.	Daily, normally Monday thru Friday evening after GFS batch processing. Can run on Saturday. Not run on Holidays. All data replaced each day.	1,170	4/18/02 11:04:36PM	FTWH1001	
T_AGENCY_BUYER	Contains information about the buyers who are assigned to a procurement agency and section.	Daily, normally Monday thru Friday evening after AGPS batch processing. All data replaced each day.	30,796	4/19/02 12:32:08AM	FTWP0201	
T_AGENCY_DFLT_ACCTG	Contains the default accounting codes by fiscal year, for a procurement agency and section. Use of default accounting codes are optional. Used in populating accounting code fields on requisitions and orders.	Daily, normally Monday thru Friday evening after AGPS batch processing. All data replaced each day.	8,804	4/19/02 12:03:25AM	FTWP1401	
T_AGENCY_FUNCTION	Contains agency function codes and descriptions. The first character of the 3 character Agency Number field is the function code. Loaded manually.	One-time manual load. Changes on request, only when a change occurs to Function descriptions.	9	6/22/01 12:00:00AM	None	Manual
T_AGENCY_FUNCTION_XREF	Contains cross reference between Agency Nbr and Function Codes, maintained by Fiscal Year.	On Request, Manually for each new year or as functions change.			None	Manual
T_AGENCY_MISSION	Contains agency mission statements, by agency number. It will be used in the EIS (Executive Information System).	On Request, Manual update			N/A	Manual

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# Introduction to Metadata for Decision-Makers

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## What is access metadata?

- Access metadata is metadata which facilitates your search for, access to, and use of digital objects. It makes the process of finding objects faster and more precise.
- Users include web page creators, search engines, archivists, records managers, librarians, researchers, and records creators.

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# Introduction to Metadata for Decision-Makers

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## Dublin Core Metadata Standard <sup>9</sup>

- ISO/NISO Standard: Dublin Core Metadata Element Set (NISO Z39.85-2001, approved July 2001) (ISO 15836, approved February 2003)
- Used for resource discovery for networked resources (e.g., web pages, PDFs)
- Audiences: Web users, page owners, page creators, search engine developers
- Goals of Dublin Core:
  - o Simplicity of creation and maintenance
  - o Commonly understood semantics
  - o International Scope
  - o Extensibility
  - o Flexibility with respect to implementation

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<sup>9</sup> <http://dublincore.org>

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# Introduction to Metadata for Decision-Makers

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## Dublin Core Metadata Standard (continued)

### 3 categories of elements:

#### Content:

- Title: A name given to the resource.
- Subject: The topic of the content of the resource.
- Description: An account of the content of the resource.
- Type: The nature or genre of the content of the resource.
- Source: A reference to a resource from which the present resource is derived.
- Relation: A reference to a related resource.
- Coverage: The extent or scope of the content of the resource.

#### Intellectual property:

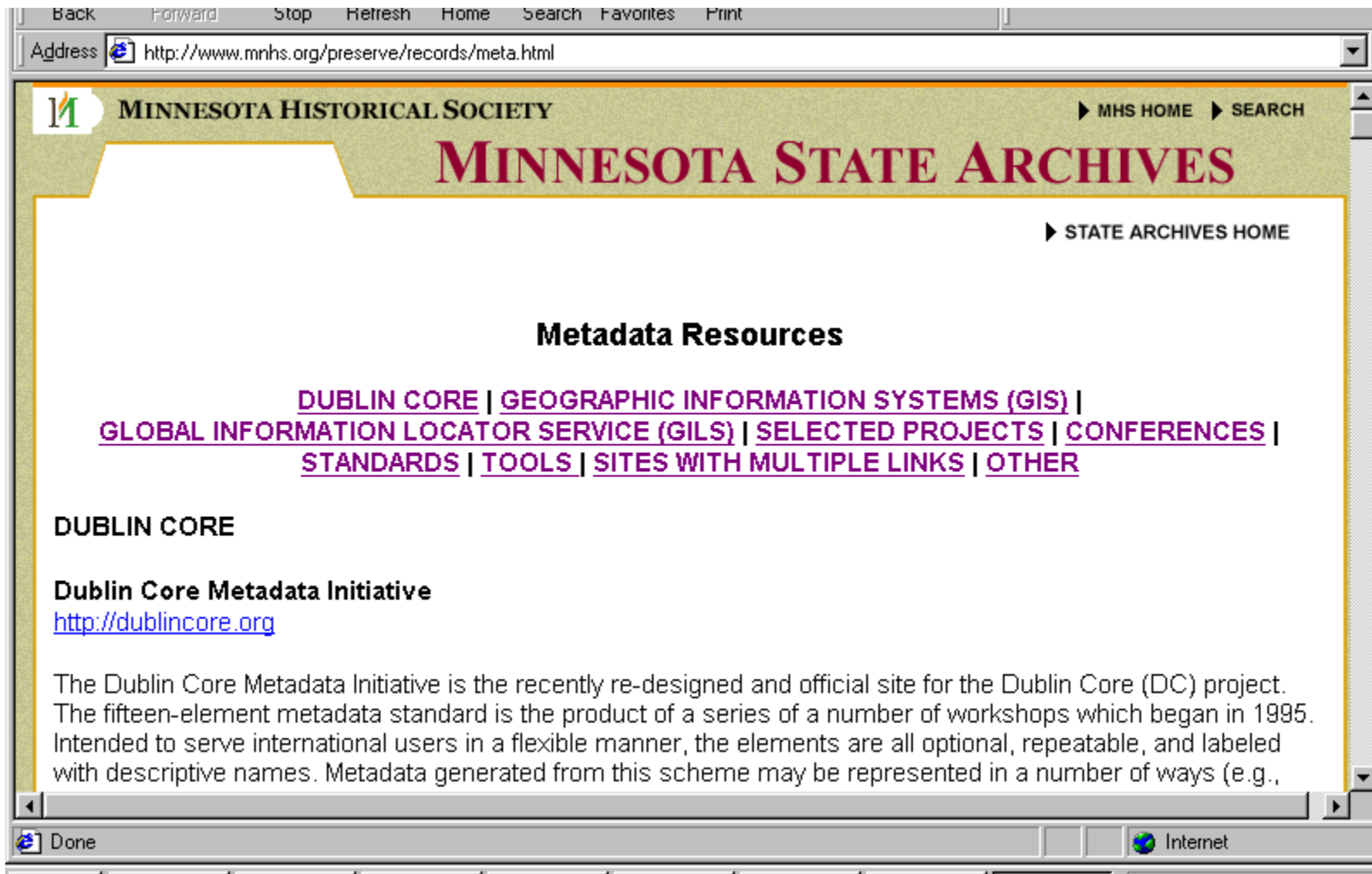
- Creator: An entity primarily responsible for making the content of the resource.
- Publisher: An entity responsible for making the resource available.
- Contributor: An entity responsible for making contributions to the content of the resource.
- Rights: Information about rights held in and over the resource.

#### Instantiation (version):

- Date: A date associated with an event in the life cycle of the resource.
- Format: The physical or digital manifestation of the resource.
- Identifier: An unambiguous reference to the resource within a given context.
- Language: A language of the intellectual content of the resource.

# Introduction to Metadata

## Example web page



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# Introduction to Metadata

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## Example web page metadata

```
<html>
<head>
<title>Metadata Resources</title>
<meta name="resource-type" content="document">
<meta name="revisit-after" content="30 days">

<!-- Start Dublin Core - Do Not Modify Tags in This Block -->
<!-- Dublin Core Meta Tags generated by TagGen - The Meta Tag Management System -->
<meta name="DC.Title" content="Metadata Resources">
<meta name="DC.Description" content="This site provides an annotated list of on-line resources relating to metadata.">
<meta name="DC.Creator.CorporateName" scheme="AACR2" content="Minnesota State Archives">
<meta name="DC.Publisher.CorporateName" scheme="AACR2" content="Minnesota State Archives">
<meta name="DC.Contributor.PageDesigner" scheme="AACR2" content="Goertz, Angela">
<meta name="DC.Date.Creation" scheme="ISO 8601" content="1998-12-11">
<meta name="DC.Date.Modified" scheme="ISO 8601" content="2003-05-14">
<meta name="DC.Type" content="Text">
<meta name="DC.Format" scheme="HTML" content="text/html">
<meta name="DC.Rights" content="../../../../mhsuse.html">
<meta name="DC.Language" scheme="ISO639-1" content="en">
<LINK REL=SCHEMA.dc HREF="http://purl.org/metadata/dublin_core_elements">
<!-- End Dublin Core - Do Not Modify This Block -->
```

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# Introduction to Metadata for Decision-Makers

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## Bridges: Minnesota's Gateway to Environmental Information <sup>10 11</sup>

- Example of government implementation
- Agencies tag own web pages using TagGen
- Feeds into state search engine, powered by Inktomi, which has been optimized for Dublin Core

### Reasons for adopting Dublin Core in Minnesota

- o Dublin Core is easy to create and provides uncomplicated descriptions.
- o Dublin Core is simple to index and use for describing a resource's location, form, etc.
- o Dublin Core allows for the use of controlled vocabularies that enable greater searching precision than full-text searches.
- o Dublin Core is a standard agreed upon by the World Wide Web Consortium (W3C).
- o Dublin Core offers extensibility and interoperability with other standards.
- o Dublin Core enhances the quality of resource management.

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<sup>10</sup> <http://bridges.state.mn.us/>

<sup>11</sup> Web Metadata Standard, IRM 21, Version 1. 2002. Visit <http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-8487&agency=OT> and click on Standards.

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## Bridges: Minnesota's Gateway to Environmental Information (continued)

Bridges is also an example of another key metadata concept: controlled vocabularies

Controlled vocabulary: a limited set of consistently used and carefully defined terms.

Controlled vocabularies may take many forms, including:

- Taxonomies
- Thesaurus (e.g., the Minnesota Legislative Indexing Vocabulary <sup>12</sup>)
- Naming conventions

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<sup>12</sup> <http://bridges.state.mn.us/servlet/lexico>

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# Introduction to Metadata for Decision-Makers

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## What is recordkeeping metadata?

- Recordkeeping is the act or process of creating, managing, and disposing of records.
- Recordkeeping metadata is information that facilitates that process.
- Users include archivists and records managers, recordkeeping staff, IT staff, information creators and users, and developers
- Used for records and information systems including: word processing documents, e-mail, databases, data warehouses, web pages, spatial data, geographic files, microform, videotapes, audio tapes, correspondence, maps, and many, many more.

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# Introduction to Metadata for Decision-Makers

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## *Minnesota Recordkeeping Metadata Standard*<sup>13 14</sup>

### **Minnesota Government Business Case for Metadata and Recordkeeping Metadata Guidelines**

- Facilitate compliance with the Minnesota Government Data Practices Act (MGDPA).
- Facilitate accountability to citizens.
- Facilitate location and retrieval of records for increased proper public access, for use in a government information locator service, and for litigation, for business use, etc.
- Reduce costs by reducing redundancy, eliminating records kept beyond retention periods, and decreasing development costs within agency.
- Improve records management with respect to retention periods (short-term, permanent, archival, etc.), storage, preservation, and access.
- Reduce paperwork (decrease use of hard copies) by increasing agencies' confidence in locating and managing electronic records.
- Achieve greater consistency of information within and across agencies.
- Facilitate sharing (when appropriate and allowed by law) within and across agencies by knowing what information is available and what is not, and carrying out cross-agency queries.
- Reduce the number of ad-hoc, agency-specific, recordkeeping metadata schemes.
- Provide recordkeeping metadata standards and guidance for consultants and vendors to allow easy reference, consistency, and agency projects to build on what others have done.
- Provide pointers to other related metadata (for instance, database data dictionaries, or online resources tagged with Dublin Core).
- Increase the reliability of recordkeeping metadata; reduce errors.

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<sup>13</sup> <http://www.mnhs.org/preserve/records/metadastandard.html>

<sup>14</sup> Minnesota Technical Enterprise Architecture, Revision 1.0. 2001. <http://www.ot.state.mn.us/architecture>

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## *Minnesota Recordkeeping Metadata Standard (IRM 20) continued*

### Mandatory Elements

- Agent:** An agency or organization unit which is responsible for some action on or usage of a record. An individual who performs some action on a record, or who uses a record in some way.
- Sub-elements: Agent type, jurisdiction, entity name, entity id, person id, personal name, organization unit, position title, contact details, e-mail, digital signature
- Rights Management:** Policies, legislation, caveats, and/or classifications which govern or restrict access to or use of records.
- Sub-elements: Minnesota Government Data Practices Act (MGDPA) classification, other access condition, usage condition, encryption details
- Title:** The name given to a record.
- Sub-elements: Official title, alternative title
- Subject:** The subject or topic of a record which concisely and accurately describes the record's content.
- Sub-elements: First subject term, enhanced subject term
- Date:** The dates and times at which the fundamental recordkeeping actions of creation, transaction, and registration [into a recordkeeping system] occur.
- Sub-elements: Date/time created, other date/time

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## *Minnesota Recordkeeping Metadata Standard (IRM 20) continued*

### Mandatory Elements continued

- Aggregation Level:** The level at which the record(s) is/are being described and controlled. The level of aggregation of the unit of description [record or series level].
- Record Identifier:** A unique identifier for the record(s).
- Management History:** The dates and descriptions of all records management actions performed on a record from its registration into a recordkeeping system to its disposal.
- Sub-elements: Event date/time, event type, event description
- Location:** The current (physical or system) location of the record.
- Sub-elements: Current location, home location details, home storage details, recordkeeping system
- Disposal:** Information about policies and conditions which pertain to or control the authorized disposal of records [records retention schedule information].
- Sub-elements: Retention schedule, retention period, disposal action, disposal due date

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# Introduction to Metadata for Decision-Makers

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## *Minnesota Recordkeeping Metadata Standard (IRM 20) continued*

### Optional Elements

- Description:** A description, in free text prose, of the content and/or purpose of the record.
- Language:** The language of the content of the record.
- Relation:** A link between one record item and another, or between various aggregations of records. A link between a record and another information resource.
- Sub-elements: Related item id, relation type, relation description
- Coverage:** The jurisdictional, spatial, and/or temporal characteristics of the content of the record.
- Sub-elements: Coverage type, coverage name
- Function:** The general or agency-specific business function(s) and activities which are documented by the record.
- Type:** The recognized form a record takes, which governs its internal structure and relates to its transactional purpose or to the action or activity it documents [e.g., letter, report].
- Format:** The logical form (media and data format) and physical format (medium and extent) of the record
- Sub-elements: Content medium, data format, storage medium, extent

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# Introduction to Metadata for Decision-Makers

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## *Minnesota Recordkeeping Metadata Standard (IRM 20) continued*

### Optional Elements continued

**Use History:** The dates and descriptions of both legal and illegal attempts to access and use a record, from the time of its registration into a recordkeeping system until its disposal.

Sub-elements: Use date/time, use type, use description

**Preservation History:** The dates and descriptions of all actions performed on a record after its registration into a recordkeeping system which ensures that the record remains readable (renderable) and accessible for as long as it has value to the agency or department, and to the community at large.

Sub-elements: Action time/date, action type, action description, next action, next action due date

**Mandate:** A source of recordkeeping requirements [applicable laws]. A piece of legislation, formal directive, policy, standard, guideline, set of procedures, or community expectation which (explicitly or implicitly) imposes a requirement to create, keep, dispose of, or control access to and use of a record.

Sub-elements: Mandate type, refers to, mandate name, mandate reference, requirement

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# Introduction to Metadata for Decision-Makers

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## Minnesota Recordkeeping Metadata Standard example

\* Indicates mandatory elements

### 1. AGENT \*

1.1	Agent Type	Records Manager
1.3	Entity Name	Minnesota Department of Administration
1.5	Person ID	johndoe [system ID]
1.6	Personal Name	John Doe
1.7	Organization Unit	Operations Services
1.8	Position Title	Government Records Analyst
1.10	E-mail	john.doe@state.mn.us

### 2. RIGHTS MANAGEMENT \*

2.1	MGDPA Classification	Private
2.2	Other Access Condition	Data sharing agreement with Minnesota Department of Human Services
2.3	Usage Condition	To be used only for the purpose of job application

### 3. TITLE \*

3.1	Official Title	Standard Application Form
3.2	Alternative Title	SAF

### 4. SUBJECT \*

4.1	First Subject Term	Occupations	Scheme: LIV-MN
4.2	Enhanced Subject Term	Salaries	Scheme: LIV-MN Subdivisions of General Application

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## Minnesota Recordkeeping Metadata Standard example (continued)

### 5. DESCRIPTION

5	Description	The Standard Application Form (SAF) is to be utilized in all State of Minnesota employment applications, including the online job application site.
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### 6. LANGUAGE

6.	Language	eng	Scheme: ISO 639-2
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### 7. RELATION

7.1	Related Item ID	<a href="http://www.revisor.leg.state.mn.us/stats/13/072.html">www.revisor.leg.state.mn.us/stats/13/072.html</a>	
7.2	Relation Type	References	
7.3	Relation Description	Statute reference within record	

### 8. COVERAGE

8.1	Coverage Type	State
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### 9. FUNCTION

9.	Function	Human Resources
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### 10. DATE \*

10.1	Date/Time Created	1997-09-01T10:06-6:00	Scheme: ISO 8601
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### 11. TYPE

11.	Type	Procedure
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# Introduction to Metadata for Decision-Makers

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## Minnesota Recordkeeping Metadata Standard example (continued)

### 12. AGGREGATION LEVEL \*

12.	Aggregation Level	Record
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### 13. FORMAT

13.1	Content Medium	Text
13.2	Data Format	Microsoft Word 2000
13.3	Storage Medium	CD-R
13.4	Extent	1.26 Mb

### 14. RECORD IDENTIFIER \*

14.	Record Identifier	97-a36975
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### 15. MANAGEMENT HISTORY \*

15.1	Event Date/Time	1997-09-01T10:07-6:00	Scheme: ISO 8601
15.2	Event Type	Registered	
15.3	Event Description	Registered into Minnesota Department of Administration recordkeeping system (Admin_1)	

### 16. USE HISTORY

16.1	Use Date/Time	2001-09-23T13:23-6:00	Scheme: ISO 8601
16.2	Use Type	Accessed	

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# Introduction to Metadata for Decision-Makers

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## Minnesota Recordkeeping Metadata Standard example (continued)

### 17. PRESERVATION HISTORY

17.1	Action Date/Time	2002-06-11T20:01-6:00	Scheme: ISO 8601
17.2	Action Type	Integrity Checked	
17.3	Action Description	Integrity checked per schedule	
17.4	Next Action	Check Integrity	
17.5	Next Action Due Date	2003-06-11	Scheme: ISO 8601

### 18. LOCATION \*

18.1	Current Location	Jane Doe, Metro Office, Minnesota Pollution Control Office
18.2	Home Location Details	Minnesota Department of Administration
18.3	Home Storage Details	Network server ID Schnoozel
18.4	Recordkeeping System	Admin_1

### 19. DISPOSAL \*

19.1	Retention Schedule	79-402, item 2
19.2	Retention Period	10 years
19.3	Disposal Action	Destroy
19.4	Disposal Due Date	2007-09-01

### 20. MANDATE

20.1	Mandate Type	Legislation
20.2	Refers To	Access/Usage
20.3	Mandate Name	Minnesota Statutes Chapter 13 (Minnesota Government Data Practices Act)

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## Introduction to Metadata for Decision-Makers

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Department of Defense. *Design Criteria Standard for Electronic Records Management Software Applications. DoD 5015.2-STD, June 2002.*<sup>15</sup>

“Provides implementing and procedural guidance on the management of records in the Department of Defense. This Standard sets forth mandatory baseline functional requirements for Records Management Application (RMA) software used by DoD Components in the implementation of their records management programs; defines required system interfaces and search criteria to be supported by the RMAs; and describes the minimum records management requirements that must be met, based on current National Archives and Records Administration (NARA) guidelines.”

Records Management Application: “a software program that helps users file and manage electronic records. It provides some of the following functions: centralized filing and storage of electronic records; version control; and search and retrieval.”

As of January 2003, sixteen Records Management Application software packages are DoD 5015.2 compliant, including:

- o Tower Software’s TRIM Context v5
- o Foremost Enterprise 2.5
- o Filenet Corporation’s Filenet IDM Content Services 5.1.1

The standard gives guidelines for capturing record metadata such as unique record identifier, subject or title, media type, format, record dates, date filed, publication date, author or originator, and location.

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<sup>15</sup> <http://jitc.fhu.disa.mil/recmgt/standards.htm>

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# Introduction to Metadata for Decision-Makers

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## What is preservation metadata?

The key to the preservation of digital resources over the long-term is to maintain:

- **Viability:** requires that the archived digital object's bit stream is intact and readable from the digital media upon which it is stored.
- **Renderability:** refers to the translation of the bit stream into a form that can be viewed by human users, or processed by computers.
- **Understandability:** involves providing enough information such that the rendered content can be interpreted and understood by its intended users.

Used for carrying out, documenting and evaluating the processes that support the long-term retention and accessibility of digital content.

Often associated with digitization projects.

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# Introduction to Metadata for Decision-Makers

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## Minnesota Historical Society Metadata Capture for Digital Imaging

Metadata information captured during the digital imaging process:

Full-Size File Name	Department/Transcriber	Compression
Thumbnail File Name	Producer	Color
Date Sent	Capture Device	Color Space
Date Received	Capture Details	Color Management
Unique Identifier	Change History	Color Bar/Grayscale Bar
Negative Number	Source	Control Targets
Creator Last Name	Encryption	Usage rights
Creator First Name	Watermark	Notes
Title/Object Description	Resolution	
Date	File Format	

- A combination of elements from the Dublin Core Metadata Standard and elements created by the RLG Working Group on Preservation Issues of Metadata <sup>16</sup>

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<sup>16</sup> Final Report, May 1998. <http://www.rlg.org/preserv/presmeta.html>

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# Introduction to Metadata for Decision-Makers

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## Minnesota Historical Society Preservation Metadata example



Full-Size File Name: pf072079  
Thumbnail File Name: pt072079  
Date Sent: N/A  
Date Received: N/A  
Unique Identifier: HD4.6 p24  
Negative Number: 77428  
Creator Last Name:  
Creator First Name:  
Title: Control Data's CDC 160 Computer  
Department/Transcriber: Processing Department. SLD  
Producer: Minnesota Historical Society 345 Kellogg  
Boulevard W., St. Paul, MN 55102-1906  
20000610  
Date:  
Capture Device: Umax Powerlook III  
Capture Details: Umax Powerlook III scanning software,  
Photoshop 5.0  
Change History: Thumbnail created  
Source: 8 x 10 photoprint  
Validation Key:  
Encryption: None  
Watermark: None  
Resolution: 150 dpi  
File Format: JPEG  
Compression: JPEG  
Color: 8-bit  
Color Space: Grayscale  
Color Management: None  
Color Bar/Grayscale Bar: None  
Control Targets: None  
Usage rights: None  
Notes:

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# Introduction to Metadata for Decision-Makers

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## Exercise: E-mail

**From:** Rounds, Shawn  
**Sent:** Tuesday, February 19, 2002 9:09 AM  
**To:** Craig A Steiner (E-mail); Eileen McCormack (E-mail); Horton, Robert; James Taylor (E-mail); Johnson, Jennifer; Karen Bondy (E-mail); Linda Feist (E-mail); Marsha K Haagenson (E-mail); Patricia Dunlop (E-mail); Steve Retzlaff (E-mail)  
**Cc:** Bruce Yurich (E-mail); Ed Potter (E-mail); Janice Zarkin (E-mail); Jay. Achenbach (E-mail)  
**Subject:** Metadata Comm: New Draft

Hello --

As promised at our last meeting, here is the latest draft of the standard, now complete with all elements. I've cleaned it up, removing the track-changes marks and doing some editing to provide consistency in phrasing, formatting, etc. It's NOT the final draft, but it's the starting point for our next round of work. It should also be online at the committee web site in the next few days (<http://www.mnhs.org/preserve/records/metadev.html>)

Believe it or not, we're nearing the end! Thanks for your continued interest and participation --



MNmetadataStandard-  
15february0...



MNmetadataStandard-  
15february0...

Shawn

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## Introduction to Metadata for Decision-Makers

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### Recordkeeping, access, and preservation metadata do not exist in a vacuum

1. Used in conjunction with other types of metadata (e.g., systems management metadata)
2. Stakeholders will use a variety of metadata
3. Assists in evaluation
4. Metadata provides a common language to use when building partnerships and collaborations.
5. Make metadata part of your overall strategic plan.

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# Introduction to Metadata for Decision-Makers

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## How to fit metadata into your overall plan

- Step 1: Identify why you need metadata. What purpose(s) are you trying to serve? What do your partners need?
- Step 2: Identify and define all the pertinent variables (tools, resources, partners, etc.)
- Step 3: Assign values to the variables to determine the appropriate strategy for your organization. Start by asking the following questions:

What resources are available inside your organization? Outside of it?

What skills do you have? Or, how can you obtain the skills you do not have?

What standards are available and applicable?

How will you train and educate people, and encourage them to become willingly involved?

What mandates, regulations, industry standards, business directive, etc. apply?

Where are the intersections among your organization, partners, and stakeholders?

Is there already metadata that's being created that you could build on?

*"Digital records don't just survive by accident"*

Margaret Hedstrom –  
University of Michigan

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# Introduction to Metadata for Decision-Makers

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Thank you

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## **APPENDIX A**

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# Appendix A

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## Metadata Crosswalks <sup>17 18 19 20 21 22</sup>

Crosswalks are a specification for mapping the elements, semantics, and syntax from one metadata standard to another.

Benefits:

- allows metadata created by one community to be used by another group that employs a different metadata standard
- facilitates access to data

Limitations:

- difficult to maintain, requires maintenance as standards change
- requires common terminology between standards
- requires similar elements between standards

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<sup>17</sup> Dublin Core to MARC and Government Information Locator Service (GILS). <http://www.loc.gov/marc/dccross.html>

<sup>18</sup> Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata to USMARC. <http://www.Alexandria.ucsb.edu/public-documents/metadata/fgdc2marc.html>

<sup>19</sup> MARC 21 to Dublin Core. <http://www.loc.gov/marc/marc2dc.html>

<sup>20</sup> Metadata: Mapping between Metadata Formats (UKOLN). <http://www.ukoln.ac.uk/metadata/interoperability/>

<sup>21</sup> Hodge, Gail. *Metadata Made Simpler*. Bethesda, MD: NISO Press, National Information Standards Organization, 2001. [http://www.niso.org/news/Metadata\\_simpler.pdf](http://www.niso.org/news/Metadata_simpler.pdf)

<sup>22</sup> Introduction to Metadata: Pathways to Digital Information, Metadata Standards Crosswalks. [http://www.getty.edu/research/institute/standards/intrometadata/3\\_crosswalks/index.html](http://www.getty.edu/research/institute/standards/intrometadata/3_crosswalks/index.html)

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# Appendix A

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## Metadata Crosswalks (continued)

Metadata crosswalks: Mapping the Minnesota Recordkeeping Metadata Standard to the Dublin Core Metadata Element Set (DCMES)

1. AGENT  
*DCMES:* Creator, Publisher, Contributor

9. FUNCTION  
*DCMES:* -

17. PRESERVATION HISTORY  
*DCMES:* -

2. RIGHTS MANAGEMENT  
*DCMES:* Rights

10. DATE  
*DCMES:* Date

18. LOCATION  
*DCMES:* -

3. TITLE  
*DCMES:* Title

11. TYPE  
*DCMES:* Types

19. DISPOSAL  
*DCMES:* -

4. SUBJECT  
*DCMES:* Subject

12. AGGREGATION LEVEL  
*DCMES:* -

20. MANDATE  
*DCMES:* -

5. DESCRIPTION  
*DCMES:* Description

13. FORMAT  
*DCMES:* Format

6. LANGUAGE  
*DCMES:* Language

14. RECORD IDENTIFIER  
*DCMES:* Identifier

7. RELATION  
*DCMES:* Source, Relation

15. MANAGEMENT HISTORY  
*DCMES:* -

8. COVERAGE  
*DCMES:* Coverage

16. USE HISTORY  
*DCMES:* -

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## **APPENDIX B**

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# Appendix B

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## List of Acronyms

ARMA	Association of Records Managers and Administrators
ASI	Advanced Strategies, Inc.
DoD	Department of Defense
DCMES	Dublin Core Metadata Element Set
E-SIGN	Electronic Signatures in Global and National Commerce Act
FGDC	Federal Geographic Data Committee
GILS	Government Information Locator Service
GIS	Geographic Information System
ISO	International Organization for Standardization
IT	Information Technology
MAC	Midwest Archives Conference
MARC	Machine Readable Cataloging
MGDPA	Minnesota Government Data Practices Act
MHS	Minnesota Historical Society

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## Appendix B

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### List of Acronyms (continued)

MRMS	Minnesota Recordkeeping Metadata Standard
NAGARA	National Association of Government Archives and Records Administrators
NHPRC	National Historical Publications and Records Commission
NISO	National Information Standards Organization
OCLC	Online Computer Library Center
PDF	Portable Document Format
RMA	Records Management Application
SAA	Society of American Archivists
TIS	Trustworthy Information Systems
XML	eXtensible Markup Language

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## APPENDIX C

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# Appendix C

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<http://www.mnhs.org/preserve/records/edarchivists.html>

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[http://thomas.loc.gov/cgi-bin/query/z?c106:S.761:](http://thomas.loc.gov/cgi-bin/query/z?c106:S.761)
- Trustworthy Information Systems Handbook  
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### Data Modeling Metadata

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➤ ISO/IEC 11179: *Metadata Registries* (2001 draft revisions)

Part 1: Framework for the Specification and Standardization of Data Elements

- <http://xw2k.sdct.itl.nist.gov/L8/document-library/projects/11179-revision/> for Parts 1-2, 4, and 6
- Look for latest versions in sub-directories

Part 2: Classification for Data Elements

Part 3: Basic Attributes of Data Elements (Registry Metamodel)

- <http://www.jtc1sc32.org/sc32/jtc1sc32.nsf/DocView750?OpenView&Count=125>
- Choose document #643 – Part 3 FCD
- Download 32N0643T.PDF

Part 4: Rules and Guidelines for the Formulation of Data Definitions

Part 5: Naming and Identification Principles for Data Elements

- <http://www.jtc1sc32.org/sc32/jtc1sc32.nsf/DocView750?OpenView&Count=125>
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Part 6: Registration of Data Elements

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