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Cataloging for the 21st Century ~ Course 4

Metadata and Digital Library Development

Metadata and Digital Library Development

Trainee Manual

Prepared by
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Cornell University Library
For
The Library of Congress
And the
Association for Library Collections & Technical Services

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Metadata and Digital Library Development

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Cataloging for the 21st Century

Course 4: Metadata and Digital Library Development

Schedule

Day 1	Sessions / Topics
8:00-8:30	**Registration**
8:30-9:00	**Introduction: Background, Goals, and Course Outline**
9:00-10:15	**Session 1: Introduction to Digital Library System Objectives, Functionality, and Metadata** • The relationship between system objectives and metadata • The objectives of Library bibliographic systems • The objectives of Digital library systems Exercise 1-A: Library Bibliographic System Metadata Exercise 1-B: Digital Library System Metadata
10:15-10:30	Break
10:30-12:00	**Session 2: Understanding Functional Requirements** • What are functional requirements? • What are "use cases" and how do they express functional requirements? • Functional requirements and metadata Exercise 2: Sample Use Case
12:00-1:30	Lunch
1:30-3:00	**Session 3: Metadata and Functionality** • Metadata assessment and analysis • Concepts and vocabulary of metadata analysis Exercise 3: Metadata Analysis
3:00-3:15	Break
3:15-4:45	**Session 4: Metadata Conversion: Enhancement and Mapping** • Why convert metadata? • Assessing and ensuring the quality of metadata • Metadata mapping strategies and processes Exercise 4: Metadata Mapping—Dublin Core Record Creation
4:45-5:00	**Conclusion of Day 1**

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Day 2	Sessions / Topics
8:30-10:15	**Session 5: Metadata Workflows** • Metadata workflow design considerations • Analyzing source and target metadata • The management aspects of metadata workflows • Designing a metadata workflow Exercise 5: Metadata Workflow—Library Publishing
10:15-10:30	Break
10:30-12:00	**Session 5: Metadata Workflows (continued)**
12:00-1:30	Lunch
1:30-3:00	**Session 6: Digital Library Development Project Exercise—Slide Collection** • Putting it all together • The metadata specialist and digital library development project • Understanding functional requirements • Addressing metadata conversion needs • Considering metadata standards • Developing workflow recommendations Exercise 6: Digital Library Development Project—Slide Collection
3:00-3:15	Break
3:15-4:15	**Session 6: Digital Library Development Project Exercise—Slide Collection (continued)**
4:15-4:30	**Workshop Conclusion, wrap-up, feedback**

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Metadata and Digital Library Development

Introduction: Background, Goals, and Course Outline

Course design: David Ruddy
Cornell University Library

1

Cat21 Series Objectives

- To equip catalogers to deal with new types of resources and to recognize their unique characteristics
- To equip catalogers to evaluate competing approaches to and standards for providing access to resources
- To equip catalogers to think creatively and work collaboratively with others inside and outside their home institutions
- To ensure that catalogers have a broad enough understanding of the current environment to be able to make their local efforts compatible and interoperable with other efforts
- To prepare catalogers to be comfortable with ambiguity and being less than perfect
- To enable practicing catalogers to put themselves into the emerging digital information environment and to continue to play a significant role in shaping library services

2

Goals for this Course

- Understand digital library design and development processes
- Explore the relationship between data/metadata and system functionality
- Understand the motivations and strategies for metadata conversion
- Understand metadata workflow design
- Appreciate the role of metadata and metadata work in digital library development projects
- Recognize the role and contributions of the metadata specialist on a digital library project team

3

Outline of this Course

Session 1: Digital Library System Objectives, Functionality, and Metadata

Session 2: Understanding Functional Requirements

Session 3: Metadata and Functionality

Session 4: Metadata Conversion: Enhancement and Mapping

Session 5: Metadata Workflows

Session 6: Digital Library Development Project Exercise

4

Metadata and Digital Library Development

Session 1:
Introduction to Digital Library System Objectives, Functionality, and Metadata

1

Goals of Session

- Understand the relationship between system objectives and metadata
- Examine the objectives of the library bibliographic system and how those objectives impact system metadata
- Explore the connection between digital library systems and digital library metadata
- Underscore the importance of system objectives when working with metadata

2

The Library Catalog

- Why do we describe library materials in the way we do?
  - Why do we catalog in the way that we do?
  - Why do we assemble certain information (metadata) about library materials, and record this metadata in such a highly defined way?

3

Cutter (1876)

Objectives of a bibliographic system

- To enable a user to find a book if the author, title, or subject is known
- To show what the library has by a given author, on a given subject, or of a given kind
- To assist in the choice of a book based on its edition (bibliographically) or its character (literary or topical)

4

IFLA (1998)

- To find entities that correspond to the user's stated search criteria
- To identify an entity
- To select an entity that is appropriate to the user's needs
- To acquire or obtain access to an entity described

5

Svenonius (2000)

- To locate
  - Known entity
  - Set of entities
- To identify an entity
- To select an appropriate entity
- To acquire or obtain access to an entity
- To navigate a bibliographic database

6

Exercise 1-A

- How does MARC metadata support the objectives of the Library Bibliographic System?
  - To find/locate
  - To identify
  - To select
  - To acquire
- What other system objectives can we detect from the system's metadata?

7

The Library Bibliographic System

- System objectives have led to specific practices in bibliographic description
  - Standards such as AACR2
- Uniform record creation is required by global bibliographic databases
  - Standard record formats (MARC21)
- Desired functionality requires precise cataloging rules and conventions

8

Exercise 1-B

- Exercise 1-B is XML encoded metadata used by some type of digital information system
- What system objectives can we detect by examining this system's metadata?

9

Digital Library Systems

- No agreed upon definition or objectives
- No agreed upon standards or formats
- Very little interoperability
- A huge number of players, many of whom are not librarians
- What is a "Digital Library," anyway?
  - Digital (Electronic) Information Systems?

10

Digital Library Systems

- A different world from the Library Bibliographic System, but not an alternate universe
- Digital library system development...
  - Still requires the articulation of objectives (desired system functionality)
  - And those objectives will depend upon certain characteristics of available or generated metadata

11

Digital Library System Objectives

- To support...
  - Discovery
  - Navigation
  - Presentation, display
  - Access control
  - Administration, management
  - Preservation
  - Others?

12

System Objectives?

- Who decides on the objectives of the digital library system?
- Who decides what functionality to support?
- Who are the players or stakeholders on digital library projects?

13

Digital Library Projects

- Digital library stakeholders:
  - Project “owner”
  - Project manager
  - Subject specialist
  - System developer/programmer
  - Metadata specialist
  - Library administrator/manager
  - End-users
  - Others?

14

System Objectives?

- How do the stakeholders decide on system objectives?
- How is system functionality developed?
- What's the process by which decisions are reached?

15

Metadata and Digital Library Development

Session 2:

Understanding Functional Requirements

1

Goals of Session

- Understand functional requirements and their usefulness
- Recognize how functional requirements inform system metadata decisions
- Understand “use cases” and how they define and record functional requirements
- Learn how a use case should be “read” by a metadata specialist

2

Functional Requirements (1)

- What are functional requirements?
  - In this context, functional requirements are those of a software system, not of bibliographic records (FRBR)
  - A more specific and detailed description of system objectives
  - They describe and define specific, required system behaviors
  - Ideally, they are developed through a requirements analysis process
  - They guide system implementation and programming work

3

Functional Requirements (2)

- How do project stakeholders develop functional requirements?
- Ideally, system designers use some reasonably formal design process
- Examples of design processes:
  - Rational Unified Process (RUP)
  - User Centered Design
  - Agile Software Development

4

Software Design Processes

- Systematic methods for generating and defining functional requirements
- Different design processes emphasize different methodologies, but there are often many similarities among them
- Most processes employ “use cases,” though they may exploit different methods to generate and develop them

5

Use Cases

- Each use case describes a single function of the system
- Each function is an interaction between the system and an external USER
- Each use case describes functionality, but not how that functionality will be accomplished
- The entire system may have dozens or hundreds of use cases
- Taken altogether, the use cases define the system’s functional requirements

6

The USER in a Use Case

- USERs are anything external to the system that will interact with it
- A USER may represent a class of users
  - Data entry staff
  - System admins
  - General public users
- A USER may represent another system
  - An OAI harvester

7

Sample Use Case

- Exercise 2: Sample Use Case
- Typical use case components:
  - Priority
  - Preconditions
  - Flow of Events (scenario)
  - Alternative Events (exceptions)
- What in this use case will depend on or impact system metadata?

8

Generating Use Cases

- The design process used will likely guide how use cases are generated
- A typical approach is to enumerate all the possible USERs of the system (everyone and everything that will interact with it), and then list every interaction
- Each of these interactions will become a use case

9

A Complete Set of Use Cases

- Together, they define the functional requirements of the proposed system
- Documented, they form a contract among stakeholders about what the system will do and not do
- Requirements help in the inevitable “panic phase” of a project
- Requirements inform our decisions about metadata, standards, software, vendors...

10

Build or Buy?

- Build or buy decisions are typical in digital library development projects
- Building a digital library system
  - Defining one's own functional requirements
  - Hiring programmers to build the system
  - Testing, evaluation, maintenance, updates
- Acquiring a pre-built digital library system
  - Finding a system with functionality that meets your requirements as nearly as possible

11

Build or Buy

- Both cases require articulating and documenting desired objectives and functionality
- If Build, these will develop into complete use cases
- If Buy, they will be used in the RFP process, and later to evaluate competing systems

12

Requirements and Metadata

- Certain functional requirements will depend upon or impact system metadata
- The requirements will inform our decisions about system metadata
  - What data elements are required
  - What content value practices need to be adopted
  - Whether metadata standards can or should be used
- If we have existing metadata, requirements will inform our analysis and conversion of it

13

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Metadata and Digital Library Development

Session 3:

Metadata and Functionality

1

Goals of Session

- Review or familiarize ourselves with concepts and vocabulary of metadata assessment and analysis
- Explore the connection between metadata and functionality

2

Metadata Specialist Scenario

- The typical digital library development situation facing the metadata specialist:
  - We have some functional requirements to meet, AND we have some metadata
  - BUT the metadata must be altered in some way (cleaned-up, augmented, enhanced, mapped...) so that it will meet our requirements

3

Metadata and Functionality

- In order to match metadata with functionality, we need first to assess, or analyze, our existing metadata
- Then we can begin to evaluate whether our metadata will or won't support particular functionality and how it will need to be converted

4

Metadata Assessment

- If we look at existing metadata, how do we describe what we observe?
  - File Format
  - Type of metadata
  - Semantics
  - Content values
  - Structure
  - Use
  - Status

5

Metadata Analysis: File Format

- File, or data exchange, formats:
  - SGML / HTML
  - XML / XHTML
  - MARC
  - “Delimited” plain-text file
  - Binary (not plain-text) formats, either open or proprietary

6

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7


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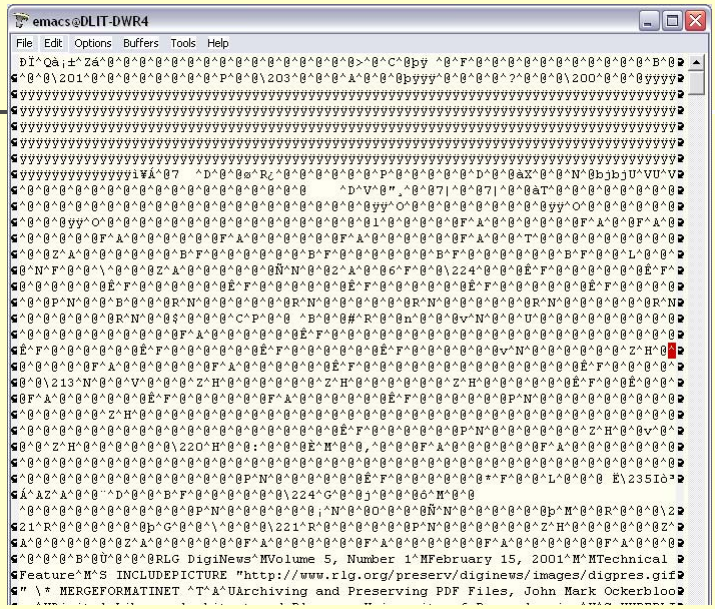

9

Metadata Analysis: Type

- Types of metadata
  - Descriptive
  - Structural
  - Administrative
  - Technical
  - Preservation
  - Access/Rights

10

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_pd 19970307
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13

Metadata Analysis: Semantics

- Metadata element sets (“schemes”)
  - MARC21
  - Dublin Core (DC)
  - EAD
  - MODS
  - VRA Core
  - METS

14

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<head>
<title>Arithmetic</title>
<meta name="ROBOTS" content="INDEX, FOLLOW" />
<meta name="DC:title" content="Arithmetic" />
<meta name="DC:creator" content="Sandburg, Carl, 1878-1967" />
<meta name="DC:creator" content="Rand, Ted, ill." />
<meta name="DC:publisher" content="San Diego :Harcourt Brace Jovanovich" />
<meta name="DC:date" content="c1993" />
<meta name="DC:language" content="eng" />
<meta name="DC:description" content="A poem about numbers and their characteristics.
Features anamorphic, or distorted, drawings which can be restored to normal by viewing from
a particular angle or by viewing the image's reflection in the provided Mylar cone." />
<meta name="DC:description" content="One Mylar sheet included in pocket." />
<meta name="DC:subject" content="Arithmetic" />
<meta name="DC:subject" content="Children's poetry, American" />
<meta name="DC:subject" content="Arithmetic" />
<meta name="DC:subject" content="American poetry" />
<meta name="DC:subject" content="Visual perception" />

<script type="text/javascript">//<![CDATA[
        function preload_image(args)
        {
        var myimages=new Array();
        var i = 1;
        args++;
        while (i != args)
        {
        myimages[i] = new Image();
        myimages[i].src = preload_image.arguments[i];
        i++;
        }
        }
```

17

Metadata Analysis: Content

- Does the metadata...
  - Adhere to any published content standards or best practices?
    - AACR2/RDA, EAD Best Practice (RLG), CCO
  - Use any known and shared vocabularies?
    - LCSH, AAT, TGM
  - Adhere to any application profiles?
- Degree of conformance to any employed standards, practices, or vocabularies?

18

Metadata Analysis: Structure

- Structure
  - What is the record structure?
    - Flat or hierarchical (nesting)
  - What relationships are possible? How complex can they be?
  - Is element qualification allowed?
  - Degree of ambiguity within data?
- General character and complexity
  - Simple unstructured
  - Simple structured
  - Richly structured

19

Metadata Analysis: Use

- What is, or was, the intended or potential use of this metadata?
  - Understanding why metadata was created and how it was used can help tell you what you can expect from it, in terms of consistency, reliability, interoperability...

20

Metadata Analysis: Status

- Static vs. dynamic
  - Static metadata will not be updated, augmented, etc.—it is essentially “dead”
  - Dynamic metadata is “living,” maintained by someone, updated when needed, perhaps regularly supplemented
- This distinction will have an impact on conversion strategies and workflows

21

Metadata Analysis Exercise

- Exercise 3: Metadata Analysis
  - Metadata assessment
  - Functional evaluation of metadata
    - Will this metadata support the required functionality?

22

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Metadata and Digital Library Development

Session 4:
Metadata Conversion:
Enhancement and Mapping

1

Goals of Session

- Explore the reasons for converting metadata
- Discuss measures for assessing and ensuring the quality of metadata
- Examine metadata mapping and its purposes
- Learn how to create a metadata map

2

Metadata Conversion

- Two broad categories or types of metadata conversion work:
  - Enhancement: cleaning up, adding, expanding, disambiguating, updating metadata
  - Mapping: moving metadata from one format to another

3

Why Enhance Metadata?

- To correct inaccuracies
- To achieve consistency
- To improve “quality”
- To fill gaps
- To provide greater or different functionality
- To foster interoperability

4

Metadata Accuracy

```
<DC_record>
  <creator>Mitchell, William J.</creator>
  <creator>Stevenson, Daniel C.</creator>
  <creator>Schoonover, Regina</creator>
  <title>Urbanowski, Frank</title>
  <subject>City of Bits: Space, Place, and the Infobahn</subject>
  <subject>Electronically mediated environments</subject>
  <subject>Cyberspace</subject>
  <type>Urbanism</type>
  <format>Text</format>
  <date>text/html</date>
  <identifier>1995</identifier>
  <language>http://press.opt.edu/CityOfBits.html</language>
</DC_record>
```

5

Metadata Consistency

- DC records with a <dc:date> element
- Most formatted in full W3C-DTF format (e.g., <dc:date>YYYY-MM-DD</dc:date>),
- except for:

  <dc:date>2000-08</dc:date>
  <dc:date>1996</dc:date>
  <dc:date>July 5, 2001</dc:date>
  <dc:date>2000 Revision</dc:date>
  <dc:date>July 19, 1996</dc:date>
  <dc:date>2001.06.04</dc:date>

6

"Quality" Metadata

"Objects, metadata, and collections must now be viewed not only within the context of the projects that created them but as building blocks that others can reuse, repackage, and build services upon."

A Framework of Guidance for Building Good Digital Collections. 2nd ed.
NISO, 2004.
http://www.niso.org/framework/framework2.html

7

Indicators of Metadata Quality

- Appropriate to the collection, its users, and the use of the objects in it
- Supports interoperability
- Uses standard controlled vocabularies
- States conditions and terms of use
- Possesses the qualities of good objects
- Supports long-term management

8

Approaches to Interoperability

- Convert to a single metadata scheme
- Allow diverse metadata schemes and map to a common scheme for particular purposes
  - For example: access, or sharing metadata
- Use a hybrid approach that involves some uniformity and some mapping

9

Tools for Interoperability

- Metadata standards
- Application profiles
- Community developed best practices
- Community accepted metadata maps (crosswalks)

10

Metadata Mapping

- A formal, repeatable conversion of metadata
  - A potentially ongoing or regularly repeated conversion process
  - Assumes consistent incoming metadata
- Requires a specification (called a “map” or “crosswalk”) that describes how to convert one metadata scheme format to another

11

DC Element	MARC Fields	Implementation notes
Title	245	
Creator	100, 110, 111, 700, 710, 711	See Appendix 1 below; Contributor element not used.
	720	
Subject	600, 610, 611, 630, 650, 653	
Description	500-599, except 506, 530, 540, 546	
Contributor		See Appendix 1 below; Contributor element not used.
Publisher	260ab	
Date	260$c	
Type	Leader06, Leader07	See Appendix 2 for Leader-Type rules
	655	
Format	856$q	
Identifier	856$u	
Source	786ot	
Language	008/35-37	
	546	
Relation	530, 760-787ot	
Coverage	651	
	752	
Rights	506, 540	

http://www.loc.gov/marc/marc2dc.html

12

Why Map Metadata?

- To accommodate a change or upgrade in an existing system
- To “ingest” metadata into another system, but maintain original metadata format
- To share metadata with a wider community, improving interoperability
  - Metadata is diverse—we will never all use the same metadata formats

13

Metadata Mapping Caveats

- Requires good knowledge of both source and target metadata formats
- Often not a one-to-one correspondence between elements
- Typically involves some conversion operations
  - Data types and values may differ
  - Structure, hierarchy may differ
  - Element optionality/repeatability may differ

14

Mapping Exercise

- Exercise 4: Metadata Mapping
  - Creating “shareable” metadata
  - Designing a detailed metadata map
  - Converting from relatively rich metadata to simple Dublin Core records

15

Metadata and Digital Library Development

Session 5:

Metadata Workflows

1

Goals of Session

- Understand the components of workflow design
- Understand the management aspects of metadata workflows (tasks, costs, constraints)
- Examine practical aspects of metadata conversion workflows
- Design a metadata workflow

2

Workflow Fundamentals

- The movement of data through a work process

  Input → Transformations → Output
- A work process will typically involve multiple components or individual steps (tasks and subtasks)
  - Each task also has its own data movement:
    - Input → Transformations → Output

3

Components of Workflow Design

- Workflow definition and goals
- Identifying constraints
- Defining the metadata workflow tasks and subtasks
- Designing the workflow
- Maintaining the workflow
- Cost considerations and opportunities

4

Workflow Definition and Goals

- Defining the workflow objectives
- Analysis of overall work process input and output
  - Understand the characteristics of the workflow input (e.g., source metadata)
  - Understand the characteristics of the workflow output (e.g., target metadata)
- Specifying the required transformation

5

Identifying Constraints

- Resources
  - Money
  - Staff
- Time
- Environmental constraints
- Knowledge and expertise

6

Defining the Tasks

- Breaking overall goal down into tasks and subtasks, small enough to be implemented
- At that level, determine each task's...
  - Requirements
    - Specifying task input and output
  - Complexity of transformation (input to output)
  - Dependencies
  - Duration
  - Resource requirements

7

Designing the Workflow

- Given the constraints, how do we put all the pieces of the workflow puzzle together in the most optimal way?
- How should tasks be structured in workflow?
  - Sequencing and scheduling of tasks
- Who or what will perform each task?
- What are the communication needs of the workflow?

8

Maintaining the Workflow

- How will the workflow and its tasks be tracked and evaluated?
  - Who is responsible for the workflow?
  - How will improvements or other changes to the workflow be made?
- Once operational, what are the workflow's ongoing management requirements?
  - How much human oversight is needed?
  - How much tracking can be automated?

9

Workflow Cost Considerations

- Workflow setup
  - What is the current and required level of staff expertise with source and target metadata schemes?
  - What staff skills are required to implement workflow transformations?
  - What can be automated?
    - Are there existing, re-usable tools available?
  - What must be done manually?
    - Any prior experience with this type of processing?

10

Workflow Cost Considerations

- Workflow maintenance
  - We need to quantify the type and extent of ongoing support and maintenance the workflow will require
  - Cost differences in maintaining manual vs. automated workflows
  - How much management oversight does the workflow require?

11

Opportunities and Benefits

- Increased knowledge and expertise
- Revenue potential
- Greater use of collections and resources
- Greater visibility of institution

12

Practical Aspects of Workflows

- Types of workflows
- Characteristics of source and target metadata, and the impact on workflow design
- When to convert metadata
- How to convert metadata

13

Types of Metadata Workflows

- Enhancement and mapping
  Source data → Transformations → Target data
- Other workflows:
  - Augmentation of records
  - Analysis or evaluation
  - Quality control/assurance

14

Metadata Conversion Workflows

- Many aspects of the workflow will depend on the characteristics of the source and target metadata
  - Static vs. dynamic source metadata
  - Other source metadata considerations
  - Target metadata

15

Source Metadata

- Static source metadata suggests...
  - A one time transfer of metadata from the creator or supplier
  - The creator or supplier is, or will eventually be, out of the picture
- Dynamic source metadata implies...
  - An ongoing, periodic transfer of the same, updated, or augmented metadata

16

The Impact on Workflow of...

- Static source metadata
  - Manual processing is at least feasible
    - No disincentive to apply manual work, except for cost
  - A more extensive and subtle range of data enhancement is possible
  - Workflow may not be *directly* reusable

17

The Impact on Workflow of...

- Dynamic source metadata
  - Much depends upon the nature and rate of change of the source metadata
  - There is a disincentive to use manual processing
    - Correcting errors
    - Manual “value-add” features
  - There is an incentive to apply programmable transformations
  - Workflow processes must be re-usable to be cost-effective

18

Source Metadata: Other Considerations

- What or who created or supplied the metadata?
  - Is there a clear and single owner?
  - Multiple suppliers?
- Is the source metadata complete?
- Why was this metadata created?
  - Was it created to meet specific functional needs?

19

Target Metadata

- What purposes are the metadata serving?
- Is this a locally defined element set or larger community standard?
- Is the metadata format supported, and by whom?
  - Is there documentation?
  - Is the format maintained and evolved over time?

20

When/How to Convert Metadata

- Will depend on the type of metadata conversion required
- Two broad categories or types of metadata conversion work:
  - Enhancement: cleaning up, adding, expanding, disambiguating, updating metadata
  - Mapping: moving metadata from one format to another

21

When to Convert Metadata?

- Once and only once
  - Abandon source metadata in favor of improved set
- Continuously
  - On-the-fly, when requested
  - To feed some downstream processes
- Only when you have to
  - Fixing problems when they are pointed out

22

How to Convert Metadata?

- Manually, record-by-record
- In batch, with automated processes
  - Planning, testing, evaluation, more planning…
  - Conversion
  - Final, or ongoing, evaluation
- A hybrid approach, with some manual and some automated processing

23

Workflow Exercise

- Exercise 5: Metadata Workflow
  - Library Publishing—designing a workflow for a metadata conversion project

24

Metadata and Digital Library Development

Session 6:

Digital Library Development
Project Exercise

1

The Slide Library Project

- Exercise 6: Digital Library Development Project—The Slide Library

2

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Metadata and Digital Library Development

Workshop Exercises

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Kiss kiss bang bang Warner Bros. Pictures presents a Silver Pictures ;...

000 02820cgm a2200553Ka 450

001 5834341

005 20060731152637.0

007 vd cvaizq

008 060216p20062005cau103 e vleng d

035 __ **|a** (OCoLC)ocm63931059

040 __ **|a** TEFMT **|c** TEFMT **|d** TEF **|d** RCS **|d** GK8 **|d** GK6 **|d** WHP **|d** OUN

020 __ **|a** 0790799944

024 10 **|a** 012569586710

028 42 **|a** 58671 **|b** Warner Home Video

037 __ **|b** Midwest Tape **|n** http://www.midwesttapes.com

041 1_ **|a** eng **|b** fre **|b** spa **|g** eng

043 __ **|a** n-us-ca

245 00 **|a** Kiss kiss bang bang **|h** [videorecording] / **|c** Warner Bros. Pictures presents a Silver Pictures ; produced by Joel Silver ; screen story and screenplay by Shane Black ; directed by Shane Black.

250 __ **|a** Widescreen ed.

260 __ **|a** Burbank, CA : **|b** Warner Home Video, **|c** 2006.

300 __ **|a** 1 videodisc (ca. 103 min.) : **|b** sd., col. ; **|c** 4 3/4 in.

538 __ **|a** DVD, region 1, widescreen presentation; Dolby Digital 5.1 surround.

546 __ **|a** English, French or Spanish dialogue with optional English, French or Spanish subtitles; closed-captioned.

511 1_ **|a** Robert Downey Jr., Val Kilmer, Michelle Monaghan, Corbin Bernsen.

508 __ **|a** Director of photography, Michael Barrett ; edited by, Jim Page ; music by, John Ottman ; costume designer, Christopher J. Kristoff ; production designer, Aaron Osborne.

500 __ **|a** Based, in part, on the novel "Bodies are where you find them" by Brett Halliday.

521 8_ **|a** MPAA rating: R; for language, violence and sexuality/nudity.

520 __ **|a** While fleeing from the cops, small time hood Harry Lockhart stumbles into an acting audition. He does so well he gets to go to Hollywood. While there, Harry pursues a girl he loved in high school and ends up geting caught up in twisted murder mystery. His only chance of getting out alive is a private detective named Gay Perry, who also works as a consultant for movies.

500 __ **|a** Special features: gag reel; commentary with Val Kilmer, Robert Downey Jr. and Shane Black; theatrical trailer.

650 _0 **|a** Acting **|x** Auditions **|v** Drama.

650 _0 **|a** Man-woman relationships **|z** California **|z** Los Angeles **|v** Drama.

650 _0 **|a** Private investigators **|z** California **|z** Los Angeles **|v** Drama.

650 _0 **|a** Feature films.

650 _0 **|a** Comedy films.

650 _0 **|a** Detective and mystery films.

650 _0 **|a** Video recordings for the hearing impaired.

700 1_ **|a** Downey, Robert, **|d** 1965-

700 1_ **|a** Kilmer, Val, **|d** 1959-

700 1_ **|a** Monaghan, Michelle.

700 1_ **|a** Bernsen, Corbin, **|d** 1954-

700 1_ **|a** Halliday, Brett. **|t** Bodies are where you find them.

700 1_ **|a** Silver, Joel. **|4** prd

700 1_ **|a** Black, Shane. **|4** aus **|4** drt

710 2_ **|a** Warner Bros. Pictures (1969-)

710 2_ **|a** Silver Pictures.

994 __ **|a** C0 **|b** COO

2046 Chun guang ying hua ; Ze dong dian ying you xian gong si zhi zuo ;...

000 02679cgm a2200565 a 450

001 5414449

005 20050218162152.0

007 vd cvaizs

008 050119s2004 cc 129 0vlchi d

028 41 **|a** VCD2758 **|b** Mei Ah Entertainment

035 __ **|a** (CStRLIN)NYCO05-F5

040 __ **|a** NIC **|c** NIC

066 __ **|c** $1

090 __ **|i** 02/18/05 N

245 00 **|6** 880-01 **|a** 2046 **|h** [videorecording] / **|c** Chun guang ying hua ; Ze dong dian ying you xian gong si zhi zuo ; bian ju, dao yan Wang Jiawei.

260 __ **|6** 880-02 **|a** Xianggang : **|b** Mei ya yu le you xian gong si, **|c** 2004.

300 __ **|a** 2 videodiscs (129 mins.) : **|b** sd., col. ; **|c** 4 3/4 in.

538 __ **|a** VCD.

520 __ **|a** Loosely a sequel to Wong's film "In the mood for love", the writer Chow in this film become a womanizer. The film tells his various relationships with a group of women. His affair with a callgirl, who resident in room 2046 in a hotel. Is 2046 a hotel room number? A train to the future? A momory? The year before China's fifty-year of self-governing promise for Hong Kong expires? It is up to you to find its own meaning.

546 __ **|a** Chinese (Cantonese or Mandarin) dialogue, Chinese subtitles.

511 1_ **|a** Liang Chaowei, Wang Fei, Gong Li, Zhang Ziyi, Liu Jialing.

538 __ **|a** VCD.

500 __ **|a** A foreign film.

650 _0 **|a** Feature films **|z** China **|z** Hong Kong.

700 1_ **|a** Wong, Kar-wai, **|d** 1958-

700 1_ **|a** Leung, Tony Chiu Wai, **|d** 1962-

700 1_ **|6** 880-03 **|a** Wang, Fei, **|d** 1969-

700 1_ **|6** 880-04 **|a** Gong, Li, **|d** 1965-

700 1_ **|6** 880-05 **|a** Zhang, Ziyi, **|d** 1979-

700 1_ **|6** 880-06 **|a** Liu, Jialing, **|d** 1964-

710 2_ **|6** 880-07 **|a** Chun guang ying hua.

710 2_ **|6** 880-08 **|a** Ze dong dian ying you xian gong si.

710 2_ **|6** 880-09 **|a** Mei ya yu le you xian gong si.

880 00 **|6** 245-01/$1 **|a** 2046 **|h** [videorecording] / **|c** 春光　映畫 ; 澤東　電影　有限　公司　制作 ; 編劇,　導演　王　家衛.

880 __ **|6** 260-02/$1 **|a** 香港 : **|b** 美亞　娛樂　有限　公司, **|c** 2004.

880 1_ **|6** 700-03/$1 **|a** 王　菲, **|d** 1969-

880 1_ **|6** 700-04/$1 **|a** 巩　俐, **|d** 1965-

880 1_ **|6** 700-05/$1 **|a** 章　子怡, **|d** 1979-

880 1_ **|6** 700-06/$1 **|a** 劉　嘉玲, **|d** 1964-

880 2_ **|6** 710-07/$1 **|a** 春光　映畫.

880 2_ **|6** 710-08/$1 **|a** 澤東　電影　有限　公司

880 2_ **|6** 710-09/$1 **|a** 美亞　娛樂　有限　公司.

948 0_ **|a** 20050208 **|b** r **|d** wt32 **|e** cts **|h** ?

957 __ **|a** yesasia.com/bw

998 __ **|a** 02/18/05 **|t** c **|s** 9114 **|l** NYCO **|n** NIC **|w** NYCO05F5 **|d** 01/19/05 **|c** TM **|b** CJK

987 __ **|a** PINYIN **|b** NIC **|d** c

950 __ **|l** WASAV **|a** videodisc 2187 (Chi)

955 __ **|l** WASAV **|c** 1:(disc 1-2) **|s** \Olin Media Center\ **|i** 02/18/05 C

948 1_ **|a** 20050218 **|b** o **|d** tkm2 **|e** cts

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<records>
  <film>
    <title>Kiss Kiss Bang Bang</title>
    <cast>Robert Downey, Jr., Val Kilmer, Michelle Monaghan, Corbin Bernsen, Dash Mihok, Larry Miller, Rockmond Dunbar, Shannyn Sossamon, Angela Lindvall</cast>
    <director>Shane Black</director>
    <release>2005</release>
    <country>USA</country>
    <description>We promise you boatloads of fun at this "deliriously enjoyable noir comedy-thriller" by veteran scriptwriter turned director, Shane Black. This pulp pleasure offers the thrills of watching Robert Downey Jr. at the top of his game playing thief-turned-actor-turned-PI Harry Lockhart, alongside the fabulously macho Val Kilmer as a real PI who goes by the name Gay Perry because he is, well, gay.</description>
    <runtime>102</runtime>
    <sound>Yes</sound>
    <color>Yes</color>
    <rating>R</rating>
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  </film>
  <film>
    <title>2046</title>
    <cast>Tony Leung Chiu Wai, Li Gong, Takuya Kimura, Faye Wong, Ziyi Zhang, Carina Lau, Chen Chang, Wang Sum, Ping Lam Siu</cast>
    <director>Wong Kar Wai</director>
    <release>2004</release>
    <country>China</country>
    <description>Tony Leung reprises his role as the frustrated romantic of In the Mood for Love in this nominal sequel, "a complex, visually rich, pull-out-all-stops rumination on memory, regret, relationships and the creative process." (SF Chronicle) In Cantonese, Japanese and Mandarin.</description>
    <runtime>129</runtime>
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    <color>Yes</color>
    <rating>R</rating>
    <creationDate>6/21/2004</creationDate>
  </film>
  <film>
    <title>The Fly (1958 version)</title>
    <cast>David Hedison, Patricia Owens, Vincent Price</cast>
    <director>Kurt Neuman</director>
    <release>1958</release>
    <country>USA</country>
    <description>The Fly is the story of one man's quest to perfect a teleporter. Unfortunately, a fly gets in the machine with him in the test phase and he emerges with the fly's head on his body and his head on the fly's body.</description>
    <runtime>94</runtime>
    <sound>Yes</sound>
    <color>No</color>
    <rating>Not Rated</rating>
```

```
    <creationDate>8/27/1999</creationDate>
  </film>
  <film>
    <title>Das Boot - Director's Cut</title>
    <cast>Juergen Prochnow, Arthur Gruenemeyer, Martin May</cast>
    <director>Wolfgang Petersen</director>
    <release>1981</release>
    <country>Germany</country>
    <description>This internationally acclaimed account of a German submarine
    crew was the first film to examine the ordinary German recruit's experience
    in WW II, and remains "a moving testament to the wastefulness of battle"
    (New York Times). The new director's cut features almost an hour of extra
    footage and a remixed soundtrack.</description>
    <runtime>210</runtime>
    <sound>Yes</sound>
    <color>Yes</color>
    <rating>R</rating>
    <creationDate>8/27/1999</creationDate>
  </film>
  <film>
    <title>Jim Dine: A Self Portrait on the Walls</title>
    <cast />
    <director>Richard Stilwell</director>
    <release>19951996</release>
    <country>USA</country>
    <description>Two short documentaries about internationally renowned artist
    Jim Dine. The first records eight days of intense work and quiet rumination as
    Dine produces an exhibition of huge, bold charcoal drawings directly on the
    walls of the Ludwigsburg Kunstverein near Stuttgart, Germany. It is an
    unusual and transitory exhibition in that the drawings remain on the walls for
    only six weeks before being painted over. All About Looking depicts Dine
    teaching drawing (from male and female nude models) at the famed
    Internationale Sommerakademie fur Bildene Kunst in Salzburg, Austria. The
    class (and the viewer) learns that the effort is not geared toward the creation
    of a finished product; it is the process that is all important -- an
    understanding that is both liberating and fortifying and designed to enable
    the student to look and to see. Cosponsored with the History of Art Majors'
    Society.</description>
    <runtime>57</runtime>
    <sound>Yes</sound>
    <color>Yes</color>
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  </film>
  <film>
    <title>L'Atalante</title>
    <cast>Jean Daste, Dita Parlo</cast>
    <director>Jean Vigo</director>
    <release>1934</release>
    <country>France</country>
    <description>Jean Vigo's genius emerges from this enchanting story of a
    marriage tested by life on the Atalante, a river barge. His poetic setpieces,
    artistic vison and life-affirming spirit animate multiple emotional
    truths.</description>
```

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    <runtime>89</runtime>
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    <cast>Lous Catel, Jean-Pierre Leaud</cast>
    <director>Philippe Garrel</director>
    <release>1993</release>
    <country>France</country>
    <description>This is an investigation of love and family life by one of the most
    personal and daring French filmmakers of the 60s generation...If you're
    interested in what's happening in contemporary French cinema, this 1993
    work is more than worth checking out (The Chicago Reader).</description>
    <runtime>94</runtime>
    <sound>Yes</sound>
    <color>Yes</color>
    <creationDate>8/27/1999</creationDate>
  </film>
  <film>
    <title>L'Avventura</title>
    <cast>Gabriele Ferzetti, Monica Vitti</cast>
    <director>Michelangelo Antonioni</director>
    <release>1960</release>
    <country>Italy</country>
    <description>Erotic and romantic portrait of infidelity in the bourgeois
    couple.</description>
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    <cast>Alain Delon, Monica Vitti, Francisco Rabal</cast>
    <director>Michelangelo Antonioni</director>
    <release>1962</release>
    <country>Italy</country>
    <description>The last part of Antonioni's trilogy of spiritual dissolution,
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    <director>Luis Bunuel</director>
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```
    <description>Bunuel said of Un Chien Andalou, his infamous collaboration with
    Salvador Dali, that audiences mistook the film for poetry, when in fact it was
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    might still be disappointed in our mad love for this inexplicable anti-montage,
    one of the great experiments in cinematic sleight of hand (or slap in the
    face). With L'Age d'Or, their next missive, came true avant-garde status:
    condemnation, disgust and state censorship of its sexual candor and death
    instinct. A radical demand for freedom amidst increasing institutionalization -
    - see it to misbelieve it. Two years later Bunuel, this time with full directorial
    control, produced the deceptive, bitter Las Hurdes (Land Without Bread). A
    documentary at first sight, a mock documentary with a second glance;
    alternatively a shallow tourist account and hyper-rational social issue film;
    ultimately a thorn in the hide of non-fiction history that asks, does your
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    night?</description>
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FOR DOUBLE SIDED COPY

8.3.2 Use Case for advanced search

Description: Access to the advanced search page will be available from all pages within the article pre-print system. The system's advanced search searches the entire database of pre-print records and all associated full-text.

Priority: Critical. Advanced search functionality is considered essential to the system's usability.

Preconditions:

- The system has content in it (metadata records, one per pre-print, and associated full-text).
- The system and all search tools are operational.
- The USER has selected the "advanced search" option from some page.

Flow of Events:

1. The system displays an Advanced Search form, with five query boxes and all other options displayed.
2. The USER enters search terms in one or more query boxes.
3. For each query box, the USER may accept or alter the default search fields associated with that box. The possible search fields on each query box are:
   - author [default in query box 1]
   - title [default in query box 2]
   - abstract [default in query box 3]
   - subject terms [default in query box 4]
   - full-text [default in query box 5]
   - all fields
4. The USER may accept or alter the boolean operator radio buttons between each query box. The possible selections are:
   - and [default, all buttons]
   - or
   - not
5. The USER may accept or alter date (pre-print submission to system) restrictions on searched content by selecting months and years from pull-down menus in "search from" and "search to" boxes. The month pull-down has all twelve months, in three-letter format. The year pull-down has year values from “2000” to the current year. Default values, which place no date restriction on searched content, are:
   - Search from: Jan | 2000 [month and year of earliest pre-prints in system]
   - Search to: MMM | YYYY [current month and year]
6. The USER may accept or alter search results sorting criteria. Possible search result sort orders are:
   - by date [default]
   - by author
   - by title

7. The USER may accept or alter the “search results per page" selection. The options are:
- 25 per page [default]
- 50 per page
- 100 per page
- 200 per page

8. The USER submits search to system by clicking a “Search” button.

9. The system executes search.

10. The system displays appropriately formatted search results meeting the USER’s search criteria. Each search result includes:
- author names, individually linked to a single-author search
- title of pre-print, linked to pre-print record
- extent of pre-print, in pages
- subject terms

Alternative Events:
- The USER clicks “Reset” button.
  The Advanced Search form is refreshed, with empty search query boxes and setting returned to default values.
- The USER selects another system page from navigational options.
  No search request is sent. The USER is taken to the selected page.
- No content records match search criteria entered by USER.
  The system displays the advanced search form to the USER, with USER's search criteria displayed. A message says explains that no records match criteria and that criteria should be altered.
- A system error occurs.
  The system displays an error page (standard error message), with a button to the advanced search form.

Exercise 3 – Metadata Analysis Exercise Instructions

Part One:

On the following pages (pp. 13-27) are six examples of metadata having to do with archival collections. Your job is to assess each example of metadata, filling in the template on page 29. For vocabulary to use in the template, there is a short summary on page 31, drawn from the slides. Look at each example of metadata independently, ignoring the fact that they all describe the same set of archival papers. Assess each one as if it is all you have. Note that the two final examples are not in electronic form—they're only on paper.

You should try to fill out the template fairly quickly—don't spend too much time on this, there are no trick questions! For "Content Values," indicate any content data standards or best practices that you know are relevant. You don't need to evaluate the degree of adherence to a standard. For "Structure," give a general structural characterization of the metadata. "Intended Use" may invite some consideration.

Part Two:

Scenario A:

Your University belongs to a broad consortium of cultural heritage institutions that include universities, museums, and state and local historical societies. The consortium would like to create a centralized discovery system for the consortium's vast range of archival collections. Your University Archives currently creates a MARC collection record and a paper archival guide for each of their archival collections, but it is clear that many of the consortium's smaller institutions have nothing more than an accession record for many of their collections.

As an advisor to the consortium's efforts, what metadata will they need in order to create their centralized discovery system?

Constraints and requirements:

- Not much in the way of resources (funding/staff) to devote to this.
- They would like something as quickly as possible.

Scenario B:

Your organization belongs to a broad state-wide consortium of cultural heritage institutions that include universities, museums, and state and local historical societies. The state government would like to create a centralized system with in-depth descriptions about all of the consortium's vast range of archival collections. Your organization, like most others in the consortium, have been creating, in MS Word, detailed archival guides for their archival collections and then converting these to HTML for web publication (a simple conversion operation, in MS Word).

Other than an accession record, these guides are the only information available about the collections.

As an advisor to the consortium's efforts, what metadata will they need in order to create their system?

Constraints and requirements:

- The state wants archival descriptions at least as detailed as the HTML guides they have now.
- The state wants sophisticated fielded searching capability in their system, such as the ability to limit searches to particular repositories, to collections that contain specific types of materials (such as letters or diaries), or to materials of a certain date range.
- It appears that that state is willing to provide whatever funds are required.

Scenario C

Your organization belongs to a broad state-wide consortium of cultural heritage institutions that include universities, museums, and state and local historical societies. The state government would like to create a centralized system with in-depth descriptions about all of the consortium's vast range of archival collections. Your organization, like most others in the consortium, have been creating, in MS Word, detailed archival guides for their archival collections and then converting these to HTML for web publication (a simple conversion operation, in MS Word). Other than an accession record, these guides are the only information available about the collections.

As an advisor to the consortium's efforts, what metadata will they need in order to create their system?

Constraints and requirements:

- The state wants archival descriptions at least as detailed as the HTML guides they have now.
- The state will commit very little funding to this project, so if it is done at all, the project must be carried out at the lowest cost possible.
- The state would like something as quickly as possible.

Scenario D

Your University Archives would like to gather management information about their archival collections in an electronic system, so that they can easily retrieve data and generate reports about collection donors, collection values, restricted content, and other management information. The Archives currently creates a MARC collection record and an EAD encoded archival guide for each of their archival collections.

What additional metadata, if any, will the University Archives need to collect to meet their objectives?

Vietnam War: statistical analysis and evaluation projects,

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001 2088649

005 20021213151108.0

008 890420i19681972nyu eng d

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100 1_ **|a** Prince, William G.

245 00 **|a** Vietnam War: statistical analysis and evaluation projects, **|f** 1968-1972.

300 __ **|a** .7 cubic ft.

545 __ **|a** Documentation was compiled by Prince as part of an Analysis of Vietnamization project, conducted by the Dept. of Applied Science and Technology, Bendix Aerospace Systems Division, sponsored by the Defense Advanced Research Projects Agency, and completed in 1973.

520 __ **|a** Documentation for various automated systems designed to provide data about the war in Vietnam. Systems include Project Corona Harvest to evaluate the effectiveness of airpower in Southeast Asia; Hamlet Evaluation System (HES), a reporting system designed to gather data on the progress of the rural pacification effort; SEAPRS (Southeast Asia Province file), designed to facilitate analysis of friendly and enemy military and pacification activity at the province level; PAAS (Pacification Attitude Analysis System), an automated system to provide a means of processing and reporting the results of surveys to determine the attitudes of the Vietnamese people toward pacification, the war, and political, social, and economic development; SEER (System for Evaluating the Effectiveness of RVNAF), designed to provide quantified evaluations of Vietnamese armed forces unit combat effectiveness in performance of assigned missions; AIRSUM (Air Summary Data Base), an historical record of all offensive air activity in Southeast Asia from 1965 to

1972; and Project Corona Harvest, an Air Force project designed to evaluate the effectiveness of air power in Southeast Asia from 1954.

555 0_ **|a** Folder list.

544 __ **|3** Additional pamphlets and reports by William G. Prince are **|a** housed in the Echols Collection, Kroch Library, Cornell University.

524 __ **|a** Prince, William G. Vietnam War: Statistical Analysis and Evaluation Systems, #4406. Division of Rare and Manuscript Collections, Cornell University Library.

650 _0 **|a** Vietnamese Conflict, 1961-1975.

650 _0 **|a** Combat **|x** Statistics **|x** Information sources.

650 _0 **|a** Internal security **|z** Vietnam.

650 _0 **|a** Insurgency **|z** Vietnam.

650 _0 **|a** Military art and science **|x** Data processing.

650 _0 **|a** Military art and science **|x** Automation.

650 _0 **|a** Military assistance, American **|z** Southeast Asia **|x** Computer programs.

856 40 **|3** Finding aid **|u** http://resolver.library.cornell.edu/cgi-bin/EADresolver?id=RMM04406

905 __ **|a** 19920617120000.0

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    <p>Documentation was compiled by Prince as part of an Analysis of
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 2B Carl A. Kroch Library<br>
 Cornell University<br>
 Ithaca, NY 14853<br>
 (607) 255-3530<br>
 Fax: (607) 255-9524<br>
 <a HREF="mailto:rareref@cornell.edu">rareref@cornell.edu</a><br>
 <a HREF="http://rmc.library.cornell.edu">http://rmc.library.cornell.edu</a><br>

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Asia Province file), designed to facilitate analysis of friendly and enemy
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Attitude Analysis System), an automated system to provide a means of processing
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designed to provide quantified evaluations of Vietnamese armed forces unit
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from 1965 to 1972; and Project Corona Harvest, an Air Force project designed to
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<P>Documentation was compiled by Prince as part of an Analysis of Vietnamization
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Guide to the Vietnam War: Statistical Analysis and Evaluation Projects, 1968-1972

Collection Number: 4406

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Compiled by:
E. Engst

Date completed:
October 1989

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DESCRIPTIVE SUMMARY

Title:
Vietnam War: statistical analysis and evaluation projects, 1968-1972
Collection Number:
4406
Creator:
William G. Prince
Quantity:
.7 cubic ft.
Forms of Material:
Manuals, reports, questionnaires, correspondence, and other documents.
Repository:
Division of Rare and Manuscript Collections, Cornell University Library
Abstract:
Documentation for various automated systems designed to provide data about the war in Vietnam.

COLLECTION DESCRIPTION

Documentation for various automated systems designed to provide data about the war in Vietnam. Systems include Project Corona Harvest to evaluate the effectiveness of airpower in Southeast Asia;

Hamlet Evaluation System (HES), a reporting system designed to gather data on the progress of the rural pacification effort; SEAPRS (Southeast Asia Province file), designed to facilitate analysis of friendly and enemy military and pacification activity at the province level; PAAS (Pacification Attitude Analysis System), an automated system to provide a means of processing and reporting the results of surveys to determine the attitudes of the Vietnamese people toward pacification, the war, and political, social, and economic development; SEER (System for Evaluating the Effectiveness of RVNAF), designed to provide quantified evaluations of Vietnamese armed forces unit combat effectiveness in performance of assigned missions; AIRSUM (Air Summary Data Base), an historical record of all offensive air activity in Southeast Asia from 1965 to 1972; and Project Corona Harvest, an Air Force project designed to evaluate the effectiveness of air power in Southeast Asia from 1954.

Documentation was compiled by Prince as part of an Analysis of Vietnamization project, conducted by the Dept. of Applied Science and Technology, Bendix Aerospace Systems Division, sponsored by the Defense Advanced Research Projects Agency, and completed in 1973.

SUBJECTS

Names:
Prince, William G.
Subjects:
Vietnamese Conflict, 1961-1975.
Combat--Statistics--Information sources.
Internal security--Vietnam.
Insurgency--Vietnam.
Military art and science--Data processing.
Military art and science--Automation.
Military assistance, American--Southeast Asia--Computer programs.

INFORMATION FOR USERS

Cite As:
Vietnam War: Statistical Analysis and Evaluation Projects, #4406. Division of Rare and Manuscript Collections, Cornell University Library.

RELATED MATERIAL

Additional pamphlets and reports by William G. Prince are housed in the Echols Collection, Kroch Library, Cornell University.

SERIES LIST

Series I. Project Corona Harvest	Box 1
Series II. HES 70	Box 1
Series III. SEAPRS	Box 1
Series IV. PAAS	Box 1

Series V. SEER	Box 1
Series VI. AIRSUM	Boxes 1 and 2

CONTAINER LIST

Description	Container
Series I. Project Corona Harvest	
System to evaluate the effectiveness of airpower in Southeast Asia, encompassing all airpower employed from 1954 to the end of the conflict (Air Force project).	
Operating instructions, 1968	Box 1 Folder 1
Series II. HES 70	
Hamlet Evaluation System--reporting system designed to gather data on the progress of the rural pacification effort.	
Data gathering instrument--formatted, multiple choice questionnaire:	
1. Respondent--U.S. advisors in the field	
2. Sample size--Every inhabited hamlet and village in south Vietnam	
3. Frequency of reporting--Every hamlet and village reported each month	
Comparison of HES 70 and PAAS	Box 1 Folder 2
Memo, 1970	Box 1 Folder 3
Appendix A--Question codes, question responses	Box 1 Folder 4
Hamlet level HES statistics and plots by NMCSSC for village program analysis (1)	Box 1 Folder 5
VSSG IDX (2)	Box 1 Folder 6
Security (3)	Box 1 Folder 7
Econ. str. (4)	Box 1 Folder 8
Econ. stm. (5)	Box 1 Folder 9
[unlabeled] (6)	Box 1 Folder 10
Soc. ben. (7)	Box 1 Folder 11
GVN pol. inf. (8)	Box 1 Folder 12
VC pol. inf.	Box 1 Folder 13
Prog. effort	Box 1 Folder 14
Misc. ques.	Box 1 Folder 15
Series III. SEAPRS	
Southeast Asia Province file--designed to facilitate analysis of friendly and enemy military and pacification activity at the province level. Summarized data is organized by month for Province Corps, Viet Cong Military Regions, Division Tactical Areas, Special Tactical Zones, and Countrywide. Some fields use data from or indicators developed by HES.	
Southeast Asia Province (also includes Hamlet Evaluations System Handbook), 1969	Box 1 Folder 16
Series IV. PAAS	
Pacification Attitude Analysis System. Automated system to provide the Military Assistance Command Civil Operations and Rural Development Support, Pacification Study Group a means of processing and reporting the results of surveys	

ACCESSION SHEET

Tentative Title or Brief Statement of Content:

Vietnam Statistical Analysis Projects

Final Title (if different from above):

Vietnam War: Statistical Analysis and Evaluation Projects

Name and Address of Donor, Office of Origin, or Other Source:

John Wagner, Bendix Document Storage, 415 Logan Ave., Bld. 10
San Diego, CA

Approximate Inclusive Dates:

1968-1972

Accession Date:

July 29, 1989

Approximate Quantity Upon Arrival:

2 16″ boxes

Physical Condition Upon Arrival:

_X_Good ___Fair ___Poor ___Other (explain)

Related MSS Collections or Archival Holdings:

Other reports by Prince in Echols

Processing Dates, Personnel, Activities:

Sept 15, 1989 – Oct 10, 1989
Fred Flintstone, Barney Rubble
Arranged, foldered, listed

Number and Size of Boxes and Linear Footage After Processing:

.7 cubic feet

Additional Comments:

See attached damaged and discarded list

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Exercise 3—Metadata Analysis Template

	File Format	Type of Metadata	Metadata Scheme	Content Values	Structure	Intended Use
MARC Record (pp. 13-14)						
Dublin Core Record (p. 15)						
EAD Document (pp. 16-20)						
HTML source code (pp. 21-23)						
Paper Archival Guide (pp. 24-26)						
Paper Accession Record (p. 27)						

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Metadata Analysis Summary

File or data exchange format

Examples:

SGML / HTML; XML / XHTML; MARC; Plain-text file, perhaps “delimited”; Binary (not plain-text) formats, either open or proprietary.

Type of metadata

Examples:

Descriptive; Structural; Administrative; Technical; Preservation; Access/Rights.

Considerations:

What is the informational content of the metadata concerned with?

Semantics (metadata scheme, element set)

Examples:

MARC21; Dublin Core (DC); EAD; MODS; VRA Core; METS; etc.

Content values

Examples:

Of content standards or best practices: AACR2/RDA; EAD Best Practice (RLG); CCO; etc.
Of published and shared vocabularies: LCSH; AAT; TGM; etc.
Of application profiles: DCMI Libraries AP; DCMI Education AP; DCMI Government AP; etc.

Considerations:

What is the degree of conformance to any employed standards, practices, or vocabularies?

Structure

Examples:

Simple unstructured; Simple structured; Richly structured

Considerations:

Is the record structure flat or hierarchical (nested)?
How complex are the relationships among data elements?
Is element qualification allowed?
What degree of ambiguity exists within the metadata?

Intended Use

Considerations:

Why was this metadata created? What functional requirements did this metadata support?
How was it used by its creators?
What can its intended use tell us about its consistency, reliability, or interoperability?

Status

Examples:

Static: metadata that is no longer updated, augmented, or maintained. It may be inherited from some source that will no longer contribute to it. It is not likely to change (unless repurposed).
Dynamic: metadata that is “living,” in the sense that it is maintained by someone, updated when needed, regularly supplemented. Dynamic metadata may change over time.

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Exercise 4—Metadata Mapping Exercise

Your task is to create a metadata map that takes relatively rich source metadata and converts it to simple Dublin Core. This map will be used by a programmer to create a conversion routine that will automatically translate the source metadata to simple DC.

This is a fairly typical mapping requirement in the library world. In order to create a union catalog of disparate resources, or share metadata from various different sources and systems, we need a common metadata format to map into. Simple DC is often selected for such purposes. Simple DC is also the minimum metadata format for metadata harvesting via the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). In other words, if you wish to allow information about the content of your collections to be harvested via OAI, you must at least provide a simple DC record for every resource (you can provide richer metadata).

Source metadata format: on pages 35-37 are three samples of source metadata native to a journal hosting system. Each page represents a single journal issue, and each issue contains child elements that hold metadata about articles. Only one or two articles per issue are listed, as samples of the metadata available in the system.

Target metadata format: simple, or unqualified, Dublin Core. Assume that the appropriate level at which to provide DC records is the article level—one simple DC record per article in the hosting system. Also assume that the simple DC records will be expressed in XML and available for OAI harvesting.

Mapping task: use the map template on pages 55-56 to create your metadata map. This mapping exercise has a fixed target, so begin with the DC elements and ask what source element or elements will be required to populate it. Describe any transformations necessary to get from source to target, or warnings or considerations that a programmer (who will have to implement the map in software code) must know about. The first element is filled in. Feel free to disagree with what has been proposed.

More about Dublin Core: on the following pages (pp. 38-42), you will find basic descriptions of each of the 15 DC elements possible in a simple, or unqualified, DC record. These are followed (pp. 43-54) by a set of DC element refinements, or qualifiers, which cannot be used in simple DC, but can be useful in determining which elements of the core set to use. This is because DC refinements provide more precision than the core elements, and you may find among them the data definition you are looking for. This then tells you which core element to use—the one which the qualifying term is refining.

Some things to keep in mind about simple Dublin Core:

- All elements are optional
- All elements are repeatable
- Simple DC can contain only the core 15 elements.
- In XML, simple DC elements cannot contain any sub-elements. In other words, no XML or HTML markup is allowed inside of simple DC elements.

On the following page are some hints about specific DC elements.

Type element: the DC element Type refers to the DCMI Type Vocabulary. That vocabulary includes only the following list of terms. You should choose the most appropriate term.

- Collection
- Dataset
- Event
- Image
- InteractiveResource
- MovingImage
- PhysicalObject
- Service
- Software
- Sound
- StillImage
- Text

Source element: this element is a tricky one. The Dublin Core Libraries Working Group says to use Source "only when the described resource is the result of digitization of non-digital originals. Otherwise, use Relation." For this exercise, assume that these journals have two separate dissemination streams: one is (still, for now) paper and one is electronic. In other words, the digital version doesn't result from the digitization of the paper copy—one is not the source of the other.

bibliographicCitation element refinement: important for serial literature is the DC element refinement called "bibliographicCitation." The DC community has decided that this is the best place to hold typical citation type data (journal name, volume number, year of publication, page range).

General hint: typically, simple DC metadata records are generated in order to increase the discovery of resources by end-users. This is certainly true of most OAI record harvesting. Let's assume that's our main goal here. So when faced with any particular mapping decision where several alternatives may be possible, choose to convey information most relevant to the discovery of the resource.

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        <surname>Soud</surname>
      </name>
  </author>
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      governing equations are solved by the shooting method. The velocity and
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      parameter <math alttext="M"><mi>M</mi></math>, Prandtl number <math
      alttext="$\mathrm{Pr}$"><mrow><mtext>Pr</mtext></mrow></math>, and the
      parameter of relative difference between the temperature of the sheet, and
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      field parameters on the shear stress and heat flux are discussed.</p>
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The Dublin Core Metadata Element Set

Term Name: contributor	
URI:	http://purl.org/dc/elements/1.1/contributor
Label:	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.
Term Name: coverage	
URI:	http://purl.org/dc/elements/1.1/coverage
Label:	Coverage
Definition:	The extent or scope of the content of the resource.
Comment:	Coverage will typically include spatial location (a place name or geographic coordinates), 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 coordinates or date ranges.
Term Name: creator	
URI:	http://purl.org/dc/elements/1.1/creator
Label:	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.

Term Name: date	
URI:	http://purl.org/dc/elements/1.1/date
Label:	Date
Definition:	A date associated with an event in the life cycle of the resource.
Comment:	Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [W3CDTF] and follows the YYYY-MM-DD format.
Term Name: description	
URI:	http://purl.org/dc/elements/1.1/description
Label:	Description
Definition:	An account of the content of the resource.
Comment:	Description may include but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content.
Term Name: format	
URI:	http://purl.org/dc/elements/1.1/format
Label:	Format
Definition:	The 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).

Term Name: identifier	
URI:	http://purl.org/dc/elements/1.1/identifier
Label:	Resource Identifier
Definition:	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).
Term Name: language	
URI:	http://purl.org/dc/elements/1.1/language
Label:	Language
Definition:	A language of the intellectual content of the resource.
Comment:	Recommended best practice is to use RFC 3066 [RFC3066], which, in conjunction with ISO 639 [ISO639], defines two- and three-letter primary language tags with optional subtags. Examples include "en" or "eng" for English, "akk" for Akkadian, and "en-GB" for English used in the United Kingdom.
Term Name: publisher	
URI:	http://purl.org/dc/elements/1.1/publisher
Label:	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.

Term Name: relation	
URI:	http://purl.org/dc/elements/1.1/relation
Label:	Relation
Definition:	A reference to a related resource.
Comment:	Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.
Term Name: rights	
URI:	http://purl.org/dc/elements/1.1/rights
Label:	Rights Management
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.
Term Name: source	
URI:	http://purl.org/dc/elements/1.1/source
Label:	Source
Definition:	A reference to a resource from which the present resource is derived.
Comment:	The present resource may be derived from the Source resource in whole or in part. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

Term Name: subject	
URI:	http://purl.org/dc/elements/1.1/subject
Label:	Subject and Keywords
Definition:	The topic of the content of the resource.
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.
Term Name: title	
URI:	http://purl.org/dc/elements/1.1/title
Label:	Title
Definition:	A name given to the resource.
Comment:	Typically, a Title will be a name by which the resource is formally known.
Term Name: type	
URI:	http://purl.org/dc/elements/1.1/type
Label:	Resource Type
Definition:	The nature or genre of the content of the resource.
Comment:	Type includes terms describing general categories, functions, genres, or aggregation levels for content. Recommended best practice is to select a value from a controlled vocabulary (for example, the DCMI Type Vocabulary [DCMITYPE]). To describe the physical or digital manifestation of the resource, use the Format element.

Element Refinements

Term Name: abstract	
URI:	http://purl.org/dc/terms/abstract
Label:	Abstract
Definition:	A summary of the content of the resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/description
Term Name: accessRights	
URI:	http://purl.org/dc/terms/accessRights
Label:	Access Rights
Definition:	Information about who can access the resource or an indication of its security status.
Comment:	Access Rights may include information regarding access or restrictions based on privacy, security or other regulations.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/rights
Term Name: alternative	
URI:	http://purl.org/dc/terms/alternative
Label:	Alternative
Definition:	Any form of the title used as a substitute or alternative to the formal title of the resource.

Comment:	This qualifier can include Title abbreviations as well as translations.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/title
Term Name: available	
URI:	http://purl.org/dc/terms/available
Label:	Available
Definition:	Date (often a range) that the resource will become or did become available.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/date
Term Name: bibliographicCitation	
URI:	http://purl.org/dc/terms/bibliographicCitation
Label:	Bibliographic Citation
Definition:	A bibliographic reference for the resource.
Comment:	Recommended practice is to include sufficient bibliographic detail to identify the resource as unambiguously as possible, whether or not the citation is in a standard form.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/identifier
Term Name: conformsTo	
URI:	http://purl.org/dc/terms/conformsTo

Label:	Conforms To
Definition:	A reference to an established standard to which the resource conforms.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: created	
URI:	http://purl.org/dc/terms/created
Label:	Created
Definition:	Date of creation of the resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/date
Term Name: dateAccepted	
URI:	http://purl.org/dc/terms/dateAccepted
Label:	Date Accepted
Definition:	Date of acceptance of the resource (e.g. of thesis by university department, of article by journal, etc.).
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/date
Term Name: dateCopyrighted	
URI:	http://purl.org/dc/terms/dateCopyrighted

Label:	Date Copyrighted
Definition:	Date of a statement of copyright.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/date
Term Name: dateSubmitted	
URI:	http://purl.org/dc/terms/dateSubmitted
Label:	Date Submitted
Definition:	Date of submission of the resource (e.g. thesis, articles, etc.).
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/date
Term Name: educationLevel	
URI:	http://purl.org/dc/terms/educationLevel
Label:	Audience Education Level
Definition:	A general statement describing the education or training context. Alternatively, a more specific statement of the location of the audience in terms of its progression through an education or training context.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/terms/audience
Term Name: extent	
URI:	http://purl.org/dc/terms/extent

Label:	Extent
Definition:	The size or duration of the resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/format
Term Name: hasFormat	
URI:	http://purl.org/dc/terms/hasFormat
Label:	Has Format
Definition:	The described resource pre-existed the referenced resource, which is essentially the same intellectual content presented in another format.
Type of Term:	element-refinement
Date Issued:	2000-07-11
Term Name: hasPart	
URI:	http://purl.org/dc/terms/hasPart
Label:	Has Part
Definition:	The described resource includes the referenced resource either physically or logically.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: hasVersion	

URI:	http://purl.org/dc/terms/hasVersion
Label:	Has Version
Definition:	The described resource has a version, edition, or adaptation, namely, the referenced resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: isFormatOf	
URI:	http://purl.org/dc/terms/isFormatOf
Label:	Is Format Of
Definition:	The described resource is the same intellectual content of the referenced resource, but presented in another format.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: isPartOf	
URI:	http://purl.org/dc/terms/isPartOf
Label:	Is Part Of
Definition:	The described resource is a physical or logical part of the referenced resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: isReferencedBy	

URI:	http://purl.org/dc/terms/isReferencedBy
Label:	Is Referenced By
Definition:	The described resource is referenced, cited, or otherwise pointed to by the referenced resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: isReplacedBy	
URI:	http://purl.org/dc/terms/isReplacedBy
Label:	Is Replaced By
Definition:	The described resource is supplanted, displaced, or superseded by the referenced resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: isRequiredBy	
URI:	http://purl.org/dc/terms/isRequiredBy
Label:	Is Required By
Definition:	The described resource is required by the referenced resource, either physically or logically.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation

Term Name: issued	
URI:	http://purl.org/dc/terms/issued
Label:	Issued
Definition:	Date of formal issuance (e.g., publication) of the resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/date
Term Name: isVersionOf	
URI:	http://purl.org/dc/terms/isVersionOf
Label:	Is Version Of
Definition:	The described resource is a version, edition, or adaptation of the referenced resource. Changes in version imply substantive changes in content rather than differences in format.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: license	
URI:	http://purl.org/dc/terms/license
Label:	License
Definition:	A legal document giving official permission to do something with the resource.
Comment:	Recommended best practice is to identify the license using a URI. Examples of such licenses can be found at http://creativecommons.org/licenses/.
Type of	element-refinement

Term:	
Refines:	http://purl.org/dc/elements/1.1/rights
Term Name: medium	
URI:	http://purl.org/dc/terms/medium
Label:	Medium
Definition:	The material or physical carrier of the resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/format
Term Name: modified	
URI:	http://purl.org/dc/terms/modified
Label:	Modified
Definition:	Date on which the resource was changed.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/date
Term Name: references	
URI:	http://purl.org/dc/terms/references
Label:	References
Definition:	The described resource references, cites, or otherwise points to the referenced resource.

Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: replaces	
URI:	http://purl.org/dc/terms/replaces
Label:	Replaces
Definition:	The described resource supplants, displaces, or supersedes the referenced resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: requires	
URI:	http://purl.org/dc/terms/requires
Label:	Requires
Definition:	The described resource requires the referenced resource to support its function, delivery, or coherence of content.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/relation
Term Name: spatial	
URI:	http://purl.org/dc/terms/spatial
Label:	Spatial
Definition:	Spatial characteristics of the intellectual content of the resource.

Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/coverage
Term Name: tableOfContents	
URI:	http://purl.org/dc/terms/tableOfContents
Label:	Table Of Contents
Definition:	A list of subunits of the content of the resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/description
Term Name: temporal	
URI:	http://purl.org/dc/terms/temporal
Label:	Temporal
Definition:	Temporal characteristics of the intellectual content of the resource.
Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/coverage
Term Name: valid	
URI:	http://purl.org/dc/terms/valid
Label:	Valid
Definition:	Date (often a range) of validity of a resource.

Type of Term:	element-refinement
Refines:	http://purl.org/dc/elements/1.1/date

Metadata Map

Source Metadata (native publisher metadata)	Transformation Rules	Target Metadata (simple DC)
journal_issue/record/title	Take source element as is. If multiple title elements in source, take all; each source title gets a separate dc:title element.	title

Metadata Map

Source Metadata (native publisher metadata)	Transformation Rules	Target Metadata (simple DC)

Exercise 5: Metadata Workflow
Scenario A—Big Dreams for Library Publishing

The library is considering whether to participate in a publishing operation run by a successful commercial internet company, Doodle. Doodle offers full-text access to on-line versions of public domain books to participating academic libraries and their communities. The number of titles in the system is now approaching twenty million.

Access to all titles in Doodle's system is free to all participating libraries. Doodle also lets the general public search and browse its metadata holdings and purchase the full-text of books or parts of books if desired. A portion of the revenue from these book sales are distributed back to the participating libraries. The pay-out distribution is based on the volume of books sold contributed by each library. In other words, if your library contributes books that sell many copies, then your library will receive a corresponding greater amount of the distributed revenue. For some libraries, this has been quite lucrative, allowing for the digital reformatting of hundreds of books a year and the hiring of additional staff to manage and carry out this work.

As part of the library's obligation, they would need to provide Doodle with electronic files of the scanned books, together with metadata for these titles in a specified format. The titles must be in the library's permanent collection.

The library has established a digital library team to come up with a proposal for working with Doodle. On this team is a metadata specialist, and she has been asked to come up with a plan for establishing an efficient workflow to generate the metadata files required by Doodle.

The library has assigned a group of selectors to decide on which books to contribute. This group will work with a publishing market consultant from Doodle to establish criteria. At this point, they plan to identify and provide (including metadata) up to 50 titles every quarter. If all goes well, they anticipate doubling this after the first year.

Doodle has shared one important piece of information with the library. Their statistics have clearly demonstrated a direct correlation between the amount of metadata provided and number of book sales. In other words, books with relatively more metadata are not only more likely to be purchased, but to be purchased multiple times. Since the library administration would like to see this venture succeed ($$$), they have encouraged the metadata specialist to take this into consideration. They have also said, recognizing this relationship between metadata richness and sales, that they are willing to find some extra staff time for metadata work during the next two years (this time would come from technical services, and they've asked the metadata specialist what she needs). After that, metadata staff associated with this project would need to be funded from project revenues.

The metadata specialist begins her investigations and has thus far learned…

- that any updates to records already shipped to Doodle are to be handled by resubmitting the monograph again. Every monograph has an ID value, and Doodle will completely replace any monograph in its system, if a new submission has the same ID.

- that the head of technical services is being very uncooperative. He has agreed to update catalog records to reflect that an electronic version of a monograph is available. But he absolutely refuses to allow additional data to be inserted into MARC records. His reasoning has to do with record consistency across all holdings. The metadata specialist knows the library administration will never go against his wishes.

The deliverables for Exercise 5 are described on pages 61-62.

Exercise 5: Metadata Workflow
Scenario B—Small Steps toward Library Publishing

The library is considering whether to participate in a publishing operation, Books-R-Us, coordinated by a university consortium. The books accessible through its system are full-text electronic versions of public domain books, which have been selected and contributed by participating libraries but are actually hosted locally by the contributing library. Books-R-Us merely provides a portal to the entire collection of scanned books by merging book records into a searchable union catalog and allowing it to be searched.

Access to the online versions of these books is free to all participating library members. As of yet, the number of participants is fairly small, but the hope is that in time, this consortium project would allow participating libraries access to much larger book collections than possible on their own.

The consortium collects fees from member libraries. It then uses this money to finance the scanning of books in a centralized location. Once scanned, the files go back to the contributing library. The library's obligation is to host the resulting electronic files on local servers, and also to provide Books-R-Us with metadata for these titles in a specified format. Books-R-Us creates its union catalog from these records.

The library has asked its metadata specialist to come up with a plan for establishing an efficient workflow to generate the metadata files required by Books-R-Us.

The library has assigned a group of selectors to decide on which books to contribute. This group expects to identify about 200 titles initially. The plan is to convert 25 of these each quarter. After two years, the project will be re-evaluated.

The library has said they have programming staff that they can dedicate to this project, in order to see it successfully setup. Once established, however, there are no plans for ongoing technical support. Further, it does not look like the library will be able to devote other ongoing staff resources to this project.

The metadata specialist begins her investigations and has thus far learned…

- that Books-R-Us expects to harvest complete metadata shipments monthly from participating libraries. This is how record updates and additions are handled. Books-R-Us completely rebuilds its entire aggregated metadata collection every month.
- that Books-R-Us insists that the metadata they receive be kept in sync with the library catalog. They do not themselves provide direct access to online books, but rather link back to a contributing library's catalog record, which in turn will link to the electronic files. In this sense, Books-R-Us only serves as a union catalog of all online books available to participating libraries.
- that Books-R-Us is using a book metadata format more typical of the commercial publishing industry, and that they are encouraging participating libraries to provide them with as much metadata per title as possible.

The deliverables for Exercise 5 are described on pages 61-62.

Exercise 5: Scenario A & B Deliverables

You are the metadata specialist on a larger team that will carry out this project. The workflow you are designing now (for this exercise) is concerned only with the metadata portion of the project. There will likely be places where your workflow will need to "interface" with other activities of the project, perhaps another workflow, but don't get sidetracked by developing non-metadata aspects of the project into your workflow (such as selection, or scanning, etc.).

1. Workflow Definition and Goals, Input/Output Analysis

   a) In a sentence or two, define the overall metadata workflow objective. Remember, this workflow is only concerned with the metadata portion of the project.
   b) Using the worksheet on page 73, briefly describe the characteristics of the workflow source metadata (samples of source metadata on pages 63-70).
   c) Using the worksheet on page 73, briefly describe the characteristics of the workflow target metadata (samples of target metadata on pages 71-72).

   Work through 1 (b) and (c) quickly. The characteristics to pay attention to are those that will impact workflow, such as, "status," especially.

   The source and target metadata examined here are at the overall project level. As you define the tasks below, there may be "transitional" metadata, and thus transitional source and target metadata requiring their own mappings. In other words, it may not be feasible or efficient to convert, in one step, the project's source metadata to the project's target metadata.

2. Identifying constraints

   a) List the constraints that you face in setting up and maintaining this metadata workflow. (See slide 6.)

3. Defining the workflow tasks

   a) Start with the overall workflow objective and begin to break it down into smaller and smaller tasks and subtasks. What you should end up with is a list of discrete and manageable tasks, ones that could feasibly be carried out within an actual workflow operation.
   b) For each of the tasks above, answer the following:
      - What are the task's requirements? Specify what is required to begin this task (what input must the task have? what is required of that input?). Specify what is required of the task output (what requirements must it fulfill?).
      - What is the level of complexity required to transform input to output?
      - What are the task dependencies? What is the task dependent upon in order to successfully transform input to output? (Your understanding of workflow constraints should help here.)
      - What is the projected duration of this task? Is it a one-time task (writing software to do something), or is it a recurring, ongoing activity? How certain is the projected

duration of the task? Do workflow constraints or task dependencies make duration difficult to predict?
- What are the resource requirements of this task? What or who needs to be involved in accomplishing this task? If people, how many and what level of expertise and experience is required?

4. Designing the workflow
   a) How should all the tasks defined in step 3 above be sequenced? Which tasks can occur simultaneously and which are dependent on a previous task?
   b) What are the communication needs of the workflow?

5. Maintaining the workflow
   a) Is this workflow a one-time data conversion project, or will it be an ongoing, regular part of library operations?
   b) If ongoing, what type of tracking and oversight is required to ensure the workflow is successfully meeting its objectives?
   c) How much human oversight will the workflow require and what will it involve?
   d) How much automated tracking is possible, and how would that tracking process work?

6. Workflow cost considerations
   a) Make an estimate of how many FTEs over what period of time would be required to setup this metadata workflow. (FTE is "full-time equivalent"—1.0 FTE equals one person working full-time on this project.)
   b) What level of staff expertise and experience will be required to setup this workflow.
   c) Make an estimate of how many FTEs would be required to maintain this metadata workflow going forward (after setup and initial operation), if that is required.
   d) What level of staff expertise and experience will be required to maintain this workflow.
   e) Do these staffing requirements match with workflow constraints? If not, how are you planning to deal with the mismatch?

7. Opportunities and benefits
   a) List all the benefits you can think of that may result from setting up and maintaining this workflow.

8. Metadata workflow conversion maps
   a) It is likely that at least one of the tasks in step 3 above involved some metadata mapping. Choose one of the mapping tasks and, using the metadata map template on pages 74-75, develop the source-to-target mapping rules.

Report on the manuscripts of Allan George Finch, esq., of...

000 01867cam a2200349 450

001 3645091

005 20060504103643.0

008 750522m19139999enk f000 0 eng c

010 __ **|a** ac 35001225 //r

035 __ **|a** (NIC)notisASL2364

035 __ **|a** (OCoLC)ocm01350566

040 __ **|a** New York. Public Libr. **|c** TOL **|d** SER **|d** OCL **|d** OUN **|d** OCL **|d** NIC

050 0_ **|a** DA25.M2 **|b** F4

082 __ **|a** 942.06

110 1_ **|a** Great Britain. **|b** Royal Commission on Historical Manuscripts.

245 00 **|a** Report on the manuscripts of Allan George Finch, esq., of Burley-on-the-Hill, Rutland ...

260 __ **|a** London, **|b** Published by H.M. Stationery Off., **|c** 1913-

300 __ **|a** v. **|c** 25 cm.

500 __ **|a** Vols. 1-2 issued in the Parliamentary series as Cd. 6508, 8383; v. 3 issued as no. 71 of the commission's Publications.

500 __ **|a** At head of title: Historical manuscripts commission.

500 __ **|a** Title varies slightly.

500 __ **|a** Vols. 1-2 edited by Mrs. S. C. Lomas, v. 3- by F. Bickley.

500 __ **|a** Vols. 1-2 deal with 16th and early 17th century letters of the Finch family; the correspondence of Heneage, earl of Winchilsea, during his embassy to Constantinople, 1660-1668; letters and papers of his cousin, Sir John Finch, who followed him as ambassador to Turkey; letters and papers of Heneage, earl of Nottingham, and his family; and the correspondence of Daniel, earl of Winchilsea and Nottingham, secretary of state from 1688-1693. cf. v. 1, p. [v]

651 _0 **|a** Great Britain **|x** History **|y** 1485- **|v** Sources.

651 _0 **|a** Turkey **|x** History **|y** 1453-1683 **|v** Sources.

651 _0 **|a** Great Britain **|x** Foreign relations **|z** Turkey.

651 _0 **|a** Turkey **|x** Foreign relations **|z** Great Britain.

700 1_ **|a** Finch, Allan George, **|d** 1863-1914.

905 __ **|a** 19991204120000.0

950 __ **|l** OLIO1 **|x** 175 **|a** DA25.M2 **|b** F49 **|d** \+\

955 __ **|l** OLIO1 **|a** DA25.M2 **|b** F49 **|c** 1:v.1-4

999 __ **|l** OLIO1 **|a** DA25.M2 **|b** F49 **|d** \+\ **|c** 1 **|v** v.1-4

Projektive geometrie der ebene, unter benutzung der punktrechnung...

000 01052cam a2200325 450

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008 851011m19091927gw 000 0 ger d

035 __ **|a** (CStRLIN)NYCX85B113967

035 __ **|a** (NIC)notisABT9133

035 __ **|a** (OCoLC)13463437

035 __ **|a** 408612

040 __ **|a** MnU **|c** MnU **|d** RPB **|d** NIC

100 1_ **|a** Grassmann, Hermann Ernst, **|d** 1857-1922.

245 10 **|a** Projektive geometrie der ebene, **|b** unter benutzung der punktrechnung...

260 __ **|a** Leipzig, **|b** B. G. Teubner. **|c** 1909-27.

300 __ **|a** 3 v. **|c** 24 cm.

500 __ **|a** Nachwort, von G. Wolff: p. [VI]

505 0_ **|a** Bd. 1. Binäres.--Bd. 2. Ternäres, 2 v.

650 _0 **|a** Geometry, Projective

650 _0 **|a** Forms, Binary

650 _0 **|a** Forms, Ternary

700 1_ **|a** Wolff, Georg. **|d** 1881-

905 __ **|a** 19880623120000.0

948 __ **|a** c:RET

950 __ **|l** MATH **|a** QA554 **|b** .G76 **|f** BASIC **|i** 10/11/85 N

955 __ **|l** MATH **|c** 1:v.1 **|i** 10/11/85 C

955 __ **|l** MATH **|c** 1:v.2 **|i** 10/11/85 C

998 __ **|a** 10/11/85 **|t** c **|s** 9124 **|n** NIC **|w** MNUG83B19018 **|d** 10/11/85 **|c** RET **|b** YOB

The war of the rebellion: a compilation of the official records of the...

000 04656cam a2200505 a 450

001 4943960

005 20061002074755.0

008 000413m18801901dcu f001 0 eng d

010 __ **|a** 03003452

040 __ **|c** NBiSU **|d** NBiSU **|d** MiU **|d** TxFACM **|d** NIC **|d** NcAvBC **|e** dcrb **|d** NIC

043 __ **|a** n-us---

050 0_ **|a** E491 **|b** .U6

110 1_ **|a** United States. **|b** War Dept.

245 14 **|a** The war of the rebellion: **|b** a compilation of the official records of the Union and Confederate armies / **|c** Pub. under the direction of the secretary of war ...

260 __ **|a** Washington : **|b** Govt. Print. Off., **|c** 1880-1901.

300 __ **|a** 123 v. ; **|c** 24 cm.

500 __ **|a** Found also in the House Miscellaneous documents of the 52d to the 56th Congress.

500 __ **|a** Each number has special index. Inserted in each volume: Additons and corrections ... Washington, Govt. Print. Off., 1902.

500 __ **|a** Series 1, v. 1-53, series 3, v. 1-5, and series 4, v. 1-3 include "Alternate designations of organizations mentioned."

500 __ **|a** Vol. 54-55 of series 1 [serial no. 112-113]" have not been published, and no material for them is in hand." cf. General index, p. xl. Series 2, v. 1 [serial no. 114] with imprint 1894, was not issued until 1898.

500 __ **|a** Edited in the War Records Office, 1880-July 1899; in the Record and Pension Office, July 1899-1901.

500 __ **|a** Incomplete set: missing volumes 1-5 of the first series. **|5** NcAvBC

500 __ **|a** Bdg.: navy blue publisher’s cloth binding, all volumes worn with some damage

to inner hinges; paper browned throughout set. |5 NcAvBC

500 __ |a Robert N. Scott compiled and edited v. 1-18, 1880-87, and also collected the greater part of the material for v. 19-36, 1887-91. After his death in 1887 the work was continued by Henry M. Lazelle, 1887-89, and by a board of publication, 1889-99, consisting of George B. Davis, 1889-97, Leslie J. Perry, 1889-99, Joseph W. Kirkley, 1889-99, and Fred C. Ainsworth, 1898-99; from 1899-1901 edited by Fred C. Ainsworth and Joseph W. Kirkley.

505 0_ |a ser. I. v. 1-53 [serial no. 1-111] Formal reports, both Union and Confederate, of the first seizures of United States property in the southern states, and of all military operations in the field, with the correspondence, orders and returns relating specially thereto. 1880-98. 111 v.--ser. II. v. 1-8 [serial no. 114-121] Correspondence, orders, reports and returns, Union and Confederate, relating to prisoners of war ... and to state or political prisoners. 1894 [i. e. 1898]-1899. 8 v.--ser. III. v. 1-5 [serial no. 122-126] Correspondence, orders, reports and return of the Union authorities (embracing their correspondence with the Confederate officials) not relating specially to the subjects of the first and second series. It embraces the reports of the secretary of war, of the general-in-chief and of the chiefs of the several staff corps and departments ... 1899-1900. 5 v.--ser. IV. v. 1-3 [serial no. 127-129] Correspondence, orders, reports and returns of the Confederate authoriites, similar to that indicated for the Union officials, as of the third series, but includeing the correspondence between the Union and Confederate authorities, given in that series. 1900. 3 v.--[serial no. 130] General index and additions and corrections. Mr. John S. Moodey, indexer. Preface [by Elihu Root, secretary of war] Explanations. Synopsis of the contents of volumes. Special index for the principal armies, army corps, military divisions

505 8_ |a and departments. General index. Additions and corrections ... 1901.

651 _0 |a United States |x History |y Civil War, 1861-1865 |x Maps.

651 _0 |a United States |x History |y Civil War, 1861-1865 |x Sources.

651 _0 |a United States |x History |y Civil War, 1861-1865 |x Regimental histories.

610 20 **|a** Confederate States of America **|x** History **|x** Sources.

710 1_ **|a** United States. **|b** Record and Pension Office.

710 1_ **|a** United States. **|b** War Records Office.

700 1_ **|a** Moodey, John S. **|q** (John Sheldon), **|d** b. 1842.

710 1_ **|a** United States. **|b** Congress. **|b** House.

700 1_ **|a** Cowles, Calvin D. **|q** (Calvin Duvall), **|d** b. 1849.

700 1_ **|a** Ainsworth, Fred C. **|q** (Fred Crayton), **|d** 1852-1934.

700 1_ **|a** Scott, Robert N. **|q** (Robert Nicholson), **|d** 1838-1887.

700 1_ **|a** Davis, George B. **|q** (George Breckenridge), **|d** 1847-1914.

700 1_ **|a** Perry, Leslie J.

700 1_ **|a** Kirkley, Joseph W. **|q** (Joseph William), **|d** 1841-1912.

740 0_ **|a** Official records of the Union and Confederate armies.

773 0_ **|7** nnbc **|t** Burt Green Wilder papers. **|w** (CStRLIN) NYCV86-A116.

948 1_ **|a** 20031211 **|b** c **|d** lbb4 **|e** rmc **|f** ? **|h** ?

948 2_ **|a** 20040811 **|b** m **|d** jm17 **|e** cts

948 2_ **|a** 20061002 **|b** m **|d** bmt1 **|e** cts

History of the city of New York, from its earliest settlement to the...

000 00706nam a22001931 450

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005 19970920120000.0

008 970920s1859 nyuacf 000 0 eng

010 __ **|a** 01014304

035 __ **|a** (NIC)notisAPZ5299

040 __ **|c** NNC **|d** NNC **|d** NNU **|d** NIC

043 __ **|a** n-us-ny

050 0_ **|a** F128.3 **|b** .B72

100 1_ **|a** Booth, Mary L. **|q** (Mary Louise), **|d** 1831-1889.

245 10 **|a** History of the city of New York, from its earliest settlement to the present time. **|c** By Mary L. Booth. Illus. with over one hundred engravings.

260 __ **|a** New York, **|b** W.R.C. Clark & Meeker, **|c** 1859.

300 __ **|a** xix, <21>-846 p. incl. illus., plates, ports. front. **|c** 24 cm.

651 _0 **|a** New York (N.Y.) **|x** History.

905 __ **|a** 19970920120000.0

Celestine, being the diary of a chambermaid. By Octave Mirbeau. Translated...

000 01107cam a22003131 450

001 1699480

005 20050419095459.0

008 891005s1930 nyu 000 0 eng

010 __ **|a** 31008215

035 __ **|a** (CStRLIN)NYCX89B29529

035 __ **|a** (NIC)notisAHY8430

040 __ **|a** DLC **|c** OKentU **|d** *SER* **|d** m.c. **|d** FU **|d** CStRLIN **|d** NIC

041 1_ **|a** eng **|h** fre

050 0_ **|a** PZ3.M674 **|b** Ce

100 1_ **|a** Mirbeau, Octave, **|d** 1848-1917

240 10 **|a** Journal d'une femme de chambre. **|l** English

245 10 **|a** Celestine, **|b** being the diary of a chambermaid. **|c** By Octave Mirbeau. Translated by Alan Durst.

260 __ **|a** New York, **|b** W. Faro, inc., **|c** 1930.

300 __ **|a** 317 p. **|c** 25 cm.

500 __ **|a** At head of title: By Octave Mirbeau.

500 __ **|a** Translation of Le journal d'une femme de chambre.

700 1_ **|a** Durst, Alan.

740 0_ **|a** Diary of a chambermaid.

905 __ **|a** 19970917120000.0

950 __ **|l** URIS **|a** PQ2364.M67 **|b** J8 1930 **|i** 10/05/89 N

955 __ **|l** URIS **|c** 1 **|s** 4th prtg.,1933 **|i** 10/05/89 C

998 __ **|a** 10/05/89 **|t** c **|s** 9125 **|n** NIC **|w** FLUGACR2289B **|d** 10/05/89 **|c** RET **|b** LJH **|i** 891005 **|l** NYCX

```xml
<?xml version="1.0"?>
<monograph id="" lang="">
     <monograph_data>
          <identifiers>
               <identifier type="doi"></identifier>
          </identifiers>
          <author>
               <name>
                    <given_name></given_name>
                    <surname></surname>
               </name>
               <affiliation>
                    <prof_title></prof_title>
                    <organization></organization>
               </affiliation>
               <bio>
                    <p></p>
               </bio>
               <image type="" id="" />
          </author>
          <contributor>
               <role></role>
               <name>
                    <given_name></given_name>
                    <surname></surname>
               </name>
               <affiliation>
                    <prof_title></prof_title>
                    <organization></organization>
               </affiliation>
               <bio>
                    <p></p>
               </bio>
               <image type="" id="" />
          </contributor>
          <title lang=""></title>
          <edition></edition>
          <publisher></publisher>
          <publisher_location></publisher_location>
          <publication_date iso8601-date=""></publication_date>
          <abstract lang="">
               <p></p>
          </abstract>
          <subjects>
               <subject scheme=""></subject>
          </subjects>
          <extent></extent>
```

```
          <cover_image id="" />
     </monograph_data>

     <monograph_parts>
          <section type="" id="">
               <identifiers>
                    <identifier type="doi"></identifier>
               </identifiers>
               <author>
                    [as above]
               </author>
               <contributor>
                    [as above]
               </contributor>
               <title lang=""></title>
               <abstract lang="">
                    <p></p>
               </abstract>
               <subjects>
                    <subject scheme=""></subject>
               </subjects>
          </section>
     </monograph_parts>

</monograph>
```

```
All elements in the target format are optional, except:
     monograph
     monograph_data
     title [required when parent element is used]
     section [at least one required when parent element is used]

Repeatable elements include:
     identifier
     author
     contributor
     affiliation
     abstract
     p (paragraph)
     subject
     section
```

Characteristics of Workflow's Source and Target Metadata

Characteristics of Source Metadata (pages 63-70)
File format:
Type of metadata:
Metadata scheme:
Scheme Support and Documentation:
Content values:
Structure:
Intended use:
Status:

Characteristics of Target Metadata (pages 71-72)
File format:
Type of metadata:
Metadata scheme:
Scheme Support and Documentation:
Content values:
Structure:
Intended use:
Status:

Metadata Map

Source	Transformation	Target

Metadata Map

Source	Transformation	Target

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The Slide Collection Digital Library Project—Background

University College has about 12,000 slides in its Art & Architecture Library slide collection, and the A&A Librarian, Mark Michelson, would like to make these accessible via the web. Most of the A&A faculty use slides in their classes and many are mentioning some system that they've heard of that allows faculty to select slides (while at home!) from a database and then show them in class, somehow. Mark isn't too sure how this would work, but he is sure there must be some software system that does all this.

One professor of Architecture in particular, Bram Bristle, is quite vocal about this and he has written to Mark and the Library Director. In an effort to appease him, the Library Director has asked the Digital Library Group (DLG) to meet with the A&A Librarian and see if there's something that can be done. Sarah Scanner, the head of DLG, meets with Mark and Bram and several other A&A faculty one afternoon. Here's what she learns:

- Currently, the Art Library has a simple Filemaker Pro database of all the slides in the collection. This was created several years ago, from a card file that was begun in the 1950s. All new slides added since the creation of the database are entered directly into the Filemaker Pro database. The database grows by about 100 entries per year.

- Each database record has about 20 elements. Records are not keyed to each other, although many, especially of the same building or place, share the same terms. The A&A Librarian seems very knowledgeable about each of the record elements, regarding what information they contain and how that information should be recorded. Mark admits, however, that there are unfortunate problems with some of the data, which he attributed to the lack of data standards in the early days of the slide collection catalog (before his time!), or to students, who occasionally enter data for him. One point that Mark kept insisting on was the accurate use, throughout the entire set of records, of the classification code. The code seemed impenetrable to Sarah, but Mark said that although the code was arcane, it was packed with information and uniformly applied throughout, since he personally applied it. When Sarah asked Mark if anyone else used the code and how, Mark said no, it was used to classify every image.

- What Sarah hears that the faculty want most are these functions:

    - The ability to access the image database over the web from their offices or homes.
    - The ability to search on the title of a work and bring up all images of that work.
    - The ability to search by period or date and bring up all works of that period or date.
    - The ability to search by type of work, like "painting," or "temple," and bring up all images pertaining to that type.
    - The ability to see small thumbnails in search results and browse mode.
    - The ability to select images and view all the metadata associated with that image.
    - The ability to select and save images to some sort of work list, so that they could be easily recovered during a classroom presentation.

Sarah assembles a team to carry out this project. The Library Director agrees that Kat Krammer, the library's metadata specialist, can be on the team. Sarah also enlists Paul Plotter, a programmer.

On the following pages (79-82) are four scenarios for how this project continues. Read the one that is assigned to your group.

Then read the list of deliverables assigned to the metadata specialist, on pages 83-84.

The Slide Collection Digital Library Project—**Scenario A-1**

The head of the Digital Library Group, Sarah Scanner, does not have an existing system that will meet the needs of this project. From peers at other universities, however, she's aware of ArtBox, a digital library system that is increasingly seeking the art library market. She thinks she can convince the Library Director to license ArtBox.

The current version of ArtBox only accepts simple Dublin Core (DC) records. The vendor apparently believes this is a drawback and has promised that the software will accept VRA Core (Visual Resources Association Core Categories) records within the next two years.

Sarah asks Kat to evaluate the Filemaker Pro metadata as well as DC and VRA Core, about which Sarah knows very little other than that these seem to be accepted standards. Kat spends some time looking at the native database records and at VRA Core. As an exercise, she creates a potential VRA Core record from a typical record in the native A&A database (see sample VRA Core record). She also begins to understand VRA Core's distinction between "work" and "image," and thinks this distinction may be useful to the project.

Sarah asks her programmer, Paul Plotter, to make an initial evaluation of ArtBox features, to see if the system has the functionality desired by the A&A faculty. Paul reports back that ArtBox supports web access worldwide (with proper authentication); the ability to associate thumbnails with every image, which are then visible in search results and browsing; the ability for authenticated users to create profiles and save image lists there for later use; and the ability to see all metadata (currently only simple Dublin Core) associated with an image. Paul says that ArtBox can be easily configured to search on any metadata field in the Dublin Core records and return all matching records. As to whether a search on a work will return all images of that work, Paul says "sure, no problem, as long as all the images have the same title." He says the same thing about searching on date and type of work.

Prompted by a question from Kat about metadata workflow and data ingest, the team takes a look at the ArtBox cataloging client. This client provides a way to create and modify individual database entries directly into ArtBox. Since ArtBox currently uses simple Dublin Core records, that's what the cataloging client guides the data imputer to create. Sarah and Kat show this client to the A&A Librarian, and he is troubled by it. The data fields are not nearly as sophisticated as those in his database, he feels, and he doesn't like the idea of using it. Besides this method of data ingest, ArtBox can also accept any number of simple DC records via a batch process.

The Slide Collection Digital Library Project—**Scenario A-2**

The head of the Digital Library Group, Sarah Scanner, does not have an existing system that will meet the needs of this project. From peers at other universities, however, she's aware of ArtBox, a digital library system that is increasingly seeking the art library market. She thinks she can convince the Library Director to license ArtBox.

The current version of ArtBox only accepts simple Dublin Core (DC) records. The vendor apparently believes this is a drawback and has promised that the software will accept VRA Core (Visual Resources Association Core Categories) records within the next two years.

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Prompted by a question from Kat about metadata workflow and data ingest, the team discovers that, remarkably, ArtBox has no cataloging client. They question the vendor on this and are told that work on a client is underway. But after more questioning, they discover that development of the cataloging client is tied to the move to VRA Core. In other words, the client won't be available before the VRA Core compliant release of ArtBox. The software does have, of course the ability to ingest any number of DC records via a batch process.

The Slide Collection Digital Library Project—**Scenario B-1**

The head of the Digital Library Group, Sarah Scanner, does not have an existing system that will meet the needs of this project. Further, the Library Director tells her that they do not have much money to devote to the project, especially on an ongoing basis. On the other hand, the Director feels strongly that they must make an effort to satisfy Bram Bristle.

After talking to her programmer, Paul Plotter, Sarah decides that it is feasible to create a web interface into the existing Filemaker Pro database. This would allow the Filemaker Pro database to continue to be used. Paul is convinced that he can add all the desired functionality through such a system, such as web access worldwide (with proper authentication); the ability to associate thumbnails with every image, which are then visible in search results and browsing; the ability for authenticated users to create profiles and save image lists there for later use; and the ability to see all metadata associated with an image. As far as searching, Paul says he can search on any of the data in the database and deliver search results. As to whether a search on a work will return all images of that work, Paul says "sure, no problem, as long as all the images have the same title." He says the same thing about searching on date and type of work.

In the midst of their initial explorations, Bram goes to the Library Director with a new idea he has just heard about. It involves participating in a larger network of university art and architecture department slide collections. After the meeting, the Library Director writes an email to Sarah telling her about this and asking her to investigate what would be involved. Sarah finds the project's web site and discovers what the requirements for participation are: participating institutions need to make metadata records for their collections available for harvesting via OAI (Open Archives Initative) in both the simple Dublin Core and VRA Core (Visual Resources Association Core Categories) standards.

Sarah asks Kat to evaluate the Filemaker Pro metadata as well as DC and VRA Core, about which Sarah knows very little other than that these seem to be accepted standards. Kat spends some time looking at the native database records and at VRA Core. As an exercise, she creates a potential VRA Core record from a typical record in the native A&A database (see sample VRA Core record). She also begins to understand VRA Core's distinction between "work" and "image," and thinks this distinction may be useful to the project.

Prompted by a question from Kat about metadata workflow and data input, the team discusses this topic. Paul is convinced that in a month or less he can move the Filemaker Pro data to another database, one that can store and ingest VRA Core records. Sarah decides that she will clear Paul's schedule so that he can concentrate exclusively on this over the next three months. Paul also plans to build an OAI component to export the DC and VRA Core records, but that should be easy, he says.

The Slide Collection Digital Library Project—**Scenario B-2**

The head of the Digital Library Group, Sarah Scanner, does not have an existing system that will meet the needs of this project. Further, the Library Director tells her that they do not have much money to devote to the project, especially on an ongoing basis. On the other hand, the Director feels strongly that they must make an effort to satisfy Bram Bristle.

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Prompted by a question from Kat about metadata workflow and data input, the team discusses this topic. Paul thinks that he can move the Filemaker Pro data to another database, one that can store VRA Core records. But Sarah realizes that she won't be able to devote Paul to this work for another two years, given all the other projects needing attention. So for now, it seems they must accept the Filemaker Pro database for data entry. Sarah does see that she will need to allow Paul to build an OAI component to export the DC and VRA Core records.

The Slide Collection Digital Library Project—Deliverables

You are the metadata specialist (Kat Krammer) on this project team, and you are being asked to contribute your expertise and understanding of metadata and metadata processing work to help the project leader develop appropriate and feasible plans for accomplishing the overall project objectives. Remember to keep your focus on aspects of the project related to metadata (and there are plenty of them), as opposed to overall project management. Specifically, the metadata specialist is asked to take responsibility for the following deliverables:

1. System functional requirements and metadata

   a) Work through the desired functional requirements described in the Project Background and list those requirements that will depend on descriptive metadata. For each…
      i) List the metadata element or elements involved in fulfilling this functional requirement.
      ii) Describe what demands the desired functionality will make on these metadata elements.
      iii) Are there different strategies for meeting this functional requirement, especially in terms of metadata?
   b) List any decisions you are aware of that the project team must make regarding functionality and metadata. You can add to this list as you work through the rest of the exercise.

2. Metadata conversion/mapping

   a) Make a list of all the metadata conversion processes that will be required for this project. For each conversion process on the list…
      i) Is this a one-time conversion of metadata, or an ongoing, recurring conversion? If an ongoing conversion, is it for a defined or indefinite duration?
      ii) Using the template on page 91, briefly describe the characteristics of the source metadata.
      iii) Using the template on page 92, briefly describe the characteristics of the target metadata.
   b) Make a list of all the metadata maps required for the metadata work on this project.
      i) For each, use the map templates on pages 93-96 to describe the transformation rules necessary for the mapping.

3. Metadata workflow design

   a) Make a list all the metadata conversion workflows, both immediate and future, that this project will require. Does this match 2 (a) above? For each workflow…
      i) Give a very brief description of the main objective (transformation) of this workflow.

ii) Identify the constraints that will impact carrying out this workflow.

iii) Begin to break down the main objective of this workflow until you have a list of manageable tasks and subtasks that can feasibly be implemented.

iv) Define the sequencing of the tasks listed in (iii) above. Which can be scheduled simultaneously and which require the completion of some prior task?

v) For any ongoing, regularly recurring conversion workflows, describe what tracking and oversight is required to maintain it. What sorts of automated tracking is feasible? How much and what type of human oversight is needed?

vi) What level of staff expertise and experience will be required to setup and/or maintain this workflow? Are these staffing needs in line with the constraints identified in (ii) above?

ACCESSION_NO: 91000031
IMAGE_FILE_ID: MDD_02250
CLASSIFICATION: B-Q5 Mdu 3.4 Meenk 5-2
PERIOD: Nayak Rulers
CURRENT LOCATION: Madurai
REGION: Tamil Nadu
COUNTRY: India
TITLE_1: Meenakshi Sundaresvara Temple
TITLE_2:
WORK_TYPE: temple; gate; reservoir
DATE: ca. 1500-1700
VIEW: Ext.: East towers and Golden Lily tank from Southwest
KEYWORDS: reservoirs; gopura; columns
NOTES: Tank is mentioned in the legend of the siting of Madurai. Dates: 16th to 17th C. Built by Nayak Rulers.
SOURCE_DONOR: Francis Max Collection
FILM_TYPE: Color: K5073, 1981
CITATION_1: Thiagarajan, K.; Meenakshi Temple, Masurai; Madurai: Meenakshi Sundareswarar Temple Renovation Committee; 1965; Fine Arts; NA6008.M28 T42
CITATION_2: Grove Dictionary of Art
CITATION_3:

ACCESSION_NO: 91000090
IMAGE_FILE_ID: MDD_02251
CLASSIFICATION: B-Q5 Mdu 3.4 Meenk 5-3
PERIOD: Nayak Rulers
CURRENT LOCATION: Madurai
REGION: Tamil Nadu
COUNTRY: India
TITLE_1: Meenakshi Sundaresvara Temple
TITLE_2:
WORK_TYPE: temple
DATE: ca. 1500-1700
VIEW: Ext.: West gopuram
KEYWORDS: gopura; streets; people
NOTES: The temple comprises two east-facing shrines dedicated to the goddess Meenakshi and to Sundareshvara.The gopuras at madurai are known for their sweeping concave profiles and profusion of images. Dates: 16th to 17th C. Built by the Nayak Rulers.
SOURCE_DONOR: Francis Max Collection
FILM_TYPE: Color: K, 1984
CITATION_1: Thiagarajan, K.; Meenakshi Temple, Masurai; Madurai: Meenakshi Sundareswarar Temple Renovation Committee; 1965; Fine Arts; NA6008.M28 T42
CITATION_2: Grove Dictionary of Art
CITATION_3:

ACCESSION_NO: 91000139
IMAGE_FILE_ID: MDD_02252
CLASSIFICATION: B-Q5 Mdu 3.4 Meenk 5-4
PERIOD: Nayak Rulers
CURRENT LOCATION: Madurai
REGION: Tamil Nadu
COUNTRY: India
TITLE_1: Sundaresvara Meenakshi Temple
TITLE_2:
WORK_TYPE: temple
DATE: 16th-18th century

VIEW: Ext.: one end of the Golden Lily tank
KEYWORDS: reservoirs; gopura; columns
NOTES: The temple comprises two east-facing shrines dedicated to the goddess Meenakshi and to Sundareshvara.The gopuras at madurai are known for their sweeping concave profiles and profusion of images. Dates: 16th to 17th C. Built by the Nayak Rulers.
SOURCE_DONOR: Francis Max Collection
FILM_TYPE: Color: K5073, 1981
CITATION_1: Balaram Iyer, T. G. S.; History & Description of Sri Meenakshi Temple; Madurai: Sri Karthikeiya Publication; 1976.
CITATION_2: Grove Dictionary of Art
CITATION_3:

ACCESSION_NO: 91000141
IMAGE_FILE_ID: MCC_0367
CLASSIFICATION: B-Q5 Mdu 3.4 Meenk 5-1
PERIOD: Nayak Rulers
CURRENT LOCATION: Madurai
REGION: Tamil Nadu
COUNTRY: India
TITLE_1: Meenakshi Temple
TITLE_2:
WORK_TYPE: temple
DATE: ca. 17th century
VIEW: Ext.: a prakara with devotees resting on the floor
KEYWORDS:
NOTES:
SOURCE_DONOR: Miles Blimmer
FILM_TYPE: Color: K5034*
CITATION_1:
CITATION_2:
CITATION_3:

ACCESSION_NO: 91000303
IMAGE_FILE_ID: DVB_08723
CLASSIFICATION: B-Q5 Pal 3.4 Shat/AdiB/AdiB 5-1
PERIOD:
CURRENT LOCATION: Palitana
REGION: Gujarat
COUNTRY: India
TITLE_1: Adisvara Bhagavan Temple
TITLE_2:
WORK_TYPE: temple
DATE: ca. 925-975
VIEW: Ext.: from Southwest, Adisvara Bhagavan w/corner of Samet Sikhar on right
KEYWORDS: sanctums; shrines
NOTES: Located at end of S summit, shrine is basically of chaumukh type. Dates: mid 10th C., before 961. Built by Javada Sah.
SOURCE_DONOR: Francis Max Collection
FILM_TYPE: Color: K5032, 1978
CITATION_1: Burgess, James; The Temples of Satrunjaya; Calcutta: Jain Bhawan; 1977
CITATION_2:
CITATION_3:

ACCESSION_NO: 91000683
IMAGE_FILE_ID: DVB_08365
CLASSIFICATION: B-Q5 Sri 6.3 Dal 4
PERIOD:
CURRENT LOCATION: Srinagar
REGION: Jammu and Kashmir
COUNTRY: India
TITLE_1: Dal Lake
TITLE_2:
WORK_TYPE: lake; market
DATE:
VIEW: Close up of vegetable vendor weighing vegetables
KEYWORDS: shikara; markets; lakes
NOTES: The 6.4 km long and 4 km wide natural lake is divided into four man-made causeways: Gangribal, Lokut Dal, Bod Dal, and Nagin. Small islands on the lake are willow-covered. The Mihrbari people have traditionally lived around and on the lake in boats.
SOURCE_DONOR:
FILM_TYPE: Color: E, 1985
CITATION_1:
CITATION_2: Grove Dictionary of Art
CITATION_3: http://srinagar.nic.in/

ACCESSION_NO: 91000646
IMAGE_FILE_ID: DVB_02736
CLASSIFICATION: B-Q5 Sri 1.1 Dal 7
PERIOD:
CURRENT LOCATION: Srinagar
REGION: Jammu and Kashmir
COUNTRY: India
TITLE_1: Dal Lake
TITLE_2:
WORK_TYPE: lake
DATE:
VIEW: Travelling on a shikara through Dal Lake
KEYWORDS: shikara; lakes; flora
NOTES: The 6.4 km long and 4 km wide natural lake is divided into four man-made causeways: Gangribal, Lokut Dal, Bod Dal, and Nagin. Small islands on the lake are willow-covered. The Mihrbari people have traditionally lived around and on the lake in boats.
SOURCE_DONOR:
FILM_TYPE: Color: K, 1985
CITATION_1:
CITATION_2: Grove Dictionary of Art
CITATION_3: http://srinagar.nic.in/

ACCESSION_NO: 91000647
IMAGE_FILE_ID: DVB_00436
CLASSIFICATION: B-Q5 Sri 1.1 Dal 8
PERIOD:
CURRENT LOCATION: Srinagar
REGION: Jammu and Kashmir
COUNTRY: India
TITLE_1: Dal Lake
TITLE_2:
WORK_TYPE: lake

DATE:
VIEW: Tourist shikaras on Dal Lake
KEYWORDS: shikara; houseboats; lakes
NOTES: The 6.4 km long and 4 km wide natural lake is divided into four man-made causeways: Gangribal, Lokut Dal, Bod Dal, and Nagin. Small islands on the lake are willow-covered. The Mihrbari people have traditionally lived around and on the lake in boats.
SOURCE_DONOR: Miles Blimmer
FILM_TYPE: Color: E5074, 1985
CITATION_1:
CITATION_2: Grove Dictionary of Art
CITATION_3: http://srinagar.nic.in/

ACCESSION_NO: 91000622
IMAGE_FILE_ID: DVB_07564
CLASSIFICATION: B-Q5 Sri 1.1 Dal 4
PERIOD:
CURRENT LOCATION: Srinagar
REGION: Jammu and Kashmir
COUNTRY: India
TITLE_1: Dal Lake
TITLE_2:
WORK_TYPE: lake; documentary photograph
DATE:
VIEW: Weed collecting on Dal Lake
KEYWORDS: shikara; weeds; gardens; people
NOTES: Locals tend to floating vegetable beds that are shielded with weeds. Natural lake is 6.4 km long and 4 km wide, and is divided into four man-made causeways: Gangribal, Lokut Dal, Bod Dal, and Nagin.
SOURCE_DONOR: Miles Blimmer
FILM_TYPE: Color: K5034, 1985*
CITATION_1:
CITATION_2: Grove Dictionary of Art
CITATION_3: http://srinagar.nic.in/

ACCESSION_NO: 91000204
IMAGE_FILE_ID: missing
CLASSIFICATION: B-Q5 Had 3.4 Stu 1-1
PERIOD:
CURRENT LOCATION: Hadda
REGION:
COUNTRY: India
TITLE_1: Stupa
TITLE_2:
WORK_TYPE: shrine
DATE:
VIEW: Plan: Tepe shutur
KEYWORDS: stupas
NOTES:
SOURCE_DONOR: Miles Blimmer
FILM_TYPE: Color: E5017
CITATION_1:
CITATION_2:
CITATION_3:

ACCESSION_NO: 91000691
IMAGE_FILE_ID: DVB_00326

CLASSIFICATION: B-Q5 Kas 2.171 Hor 2
PERIOD:
CURRENT LOCATION:
REGION: Kashmir
COUNTRY: India
TITLE_1: Packed Horses on Road in Kashmir in 1985
TITLE_2:
WORK_TYPE: transportation
DATE:
VIEW:
KEYWORDS: transportation; horses
NOTES:
SOURCE_DONOR:
FILM_TYPE: Color: E5034, 1985
CITATION_1:
CITATION_2:
CITATION_3:

ACCESSION_NO: 91000110
IMAGE_FILE_ID: missing
CLASSIFICATION: B-Q5 Kum 3.4 SSrg 9a-1
PERIOD:
CURRENT LOCATION: Kumbakonam
REGION: Tamil Nadu
COUNTRY: India
TITLE_1: Sri Sarangapani Temple
TITLE_2:
WORK_TYPE: temple
DATE: ca. 1100-1175
VIEW: Ext.det.: front gopuram
KEYWORDS: Vaishnavite temple
NOTES: Among the most important temples dedicated to Vishnu. The gopura is 11 stories and 44 meters high. Dates: early to mid 12th C., 1121 onward. Built by a Chola Ruler (possibly Vikrama Chola).
SOURCE_DONOR:
FILM_TYPE: Color: K5032, 1978
CITATION_1: Meena, V.; Temples of South India; Kanyakumari: Hari Kumari Arts; 1976; Fine Arts; NA6007.S6 M51
CITATION_2:
CITATION_3:

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<vra xmlns="http://www.vraweb.org/vracore4.htm">
    <work id="B-Q5 Kan 3.4 SVar/Anan">
        <date type="creation" start="1025" end="1400">ca. 1025-1400</date>
        <description>Sacred tank lies in the NE sector of the fourth prakara. Dates:
        mid 11th to 14th C. Extensive building by Kulottunga Chola I and his son
        Vikrana Chola.</description>
        <location>
            <name type="geographic">Kanchipuram (Tamil Nadu, India)</name>
        </location>
        <objectType>temple</objectType>
        <objectType>reservoir</objectType>
        <source>
            <name>Raman, K. V.; Sri Varadarajaswami Temple, Kanchi: a Study of its
            History, Art, and Architecture; New Delhi: Abhinav Publications;
            1975.</name>
        </source>
        <source>
            <name>Grove Dictionary of Art</name>
        </source>
        <source>
            <name>http://srinagar.nic.in/</name>
        </source>
        <title type="local" pref="true">Sri Varadarajaswami Temple</title>
        <title type="local" pref="false">Hastigiri</title>
        <image id="MCD_00894" source="Francis Max Collection">
            <agent>
                <name type="corporate name">Avon Digital Production Services (New
                York, NY, USA)</name>
                <role id="300237903" vocab="AAT">digital imaging</role>
            </agent>
            <date type="view">1982</date>
            <date type="creation">2005</date>
            <location>
                <name type="repository">Art & Architecture Library, University
                College (Newfield, NY, USA)</name>
                <id type="accession">91000082</id>
                <id type="classification">B-Q5 Kan 3.4 SVar/Anan 5-1</id>
            </location>
            <objectType id="300215302" vocab="AAT">digital images</objectType>
            <relation id="B-Q5 Kan 3.4 SVar/Anan" type="image of">Sri
            Varadarajaswami Temple</relation>
            <subject>reservoirs</subject>
            <subject>mandapa</subject>
            <technique id="300237903" vocab="AAT">digital imaging</technique>
            <title type="full view">Ext.: Anantasaras tank viewed from along pillared
            Kalyana Vandapa</title>
        </image>
    </work>
</vra>
```

Characteristics of Source Metadata

Characteristics of Source Metadata

File format:

Type of metadata:

Metadata scheme:

Scheme Support and Documentation:

Content values:

Structure:

Intended use:

Status:

Characteristics of Source Metadata

File format:

Type of metadata:

Metadata scheme:

Scheme Support and Documentation:

Content values:

Structure:

Intended use:

Status:

Characteristics of Target Metadata

Characteristics of Target Metadata

File format:

Type of metadata:

Metadata scheme:

Scheme Support and Documentation:

Content values:

Structure:

Intended use:

Status:

Characteristics of Target Metadata

File format:

Type of metadata:

Metadata scheme:

Scheme Support and Documentation:

Content values:

Structure:

Intended use:

Status:

Metadata Map

Source	Transformation	Target

Metadata Map

Source	Transformation	Target

Metadata Map

Source	Transformation	Target

Metadata Map

Source	Transformation	Target

Exercise 3: Metadata Analysis

Part One:

MARC Record

File Format: MARC (technically, it's presented here in some nicely formatted way and thus not really what a MARC record would look like without MARC-capable software).
Type of Metadata: Descriptive primarily, some Admin. Others?
Metadata Scheme: MARC21.
Content Values: AACR2, LCSH.
Structure: Richly structured? Some might debate this. It likely depends on how devoted you are to MARC.
Intended Use: for use in a library bibliographic system. Can we call this single use data?

Dublin Core Record

File Format: XML.
Type of Metadata: Descriptive only.
Metadata Scheme: Unqualified, or simple, Dublin Core.
Content Values: Not clear from record itself. Note that Date element isn't in a DC recommended encoding (as we'll see in Exercise 4).
Structure: Simple structured, flat, no hierarchical relationships (nesting).
Intended Use: Hard to say, but the typical use of simple DC is for resource discovery and/or interoperability with other systems (in the sense of metadata sharing, potentially beyond the library world).

EAD Document

File Format: XML.
Type of Metadata: Descriptive; there is structural information about the analog collection. There is some but not much administrative metadata, for collection management—a shortcoming of EAD.
Metadata Scheme: Encoded Archival Description (EAD).
Content Values: Overall, it perhaps follows some best practices, such as RLG's Best Practices for EAD. This would need to be determined. Some data values are labeled such that we can see they are LCSH.
Structure: Richly structured.
Intended Use: Multiple potential uses: Sophisticated discovery system possible, with fielded searching. Potential interoperability of rich archival descriptions (contributing EAD documents to common, union database). Control of archival descriptions. Publishing (print or web) of archival guides.

HTML Source Code

File Format: HTML (not all HTML is XML, and there is no indication that this is).
Type of Metadata: Descriptive.
Metadata Scheme: None, really; at least in its present form. The markup, the encoding, is almost entirely "presentational," indicating to the browser how to render a document on a

computer screen. It is not "descriptive" markup, in that it makes any semantic distinctions among data elements ("this is a date," "this is a subject," etc.).

Content Values: Difficult to say from what we have. There are guidelines to describing archival collections, and perhaps they were followed.

Structure: Simple unstructured.

Intended Use: Web publication (pretty much the only thing HTML is useful for).

Paper Archival Guide

File Format: Well, this isn't a file, but a piece of paper. How is data exchanged? Visually. Document structure is conveyed by means of page layout and character formatting.

Type of Metadata: Descriptive, a little Admin.

Metadata Scheme: Some commonly accepted practices for archival description?

Content Values: May follow accepted standards or guidelines for archival descriptions. We would probably need to see more archival descriptions from the same source, or talk with the generating repository, to be sure.

Structure: Since it's on paper, any structure to the information is revealed visually. This would assist in the digital conversion of such guides, but such conversion would be a manual process.

Intended Use: Publication (traditional, paper-based).

Paper Accession Record

File Format: Paper—see above.

Type of Metadata: Administrative mostly.

Metadata Scheme: Some common archival descriptive terms, but the particular format may or may not be unique to a single archive.

Content Values: Some standard archival terminology.

Structure: Assuming such sheets were used over many years, and that their form didn't change too much (a big assumption), then the data might be considered fairly structured. But again, to capture it in electronic form would most likely be done manually (keyboarding the data).

Intended Use: Internal workflow administration and management, record keeping.

What about the Status for all metadata examples here? All these examples of metadata would probably be more in the "dynamic" category. Although such records may rarely change, they all support active use. If an error were detected, it no doubt would be corrected. They have not become detached from their creator or their intended use.

Part Two:

Scenario A: A lot will depend on the "centralized discovery system." Since nothing is said about what the system may be, we can assume the consortium has not thought this through. What will we advise, given that we know they do not have a lot of resources to devote to this (money/staff), and that they'd like something fairly quickly? These constraints suggest that we need to focus on collection-level description, as opposed to more complete or in-depth collection inventories (such as EAD might provide). We know that moving the entire consortium beyond collection-level description would likely become too expensive and time consuming. But even if there is a

decision to stick with collection-level description, there is still the question of what metadata to use for such descriptions.

Here are two options:

1) Prepare collection-level MARC records for all collections. The larger institutions are ready to go and could perhaps help smaller organizations prepare records—either doing the work or offering training. There may be some question about uniformity of such records, and thus some time and energy may be spent on existing records, although this probably would not be absolutely necessary.

   Once a process was in place to obtain MARC records for all collections, then questions about the discovery system could be addressed. The records could be loaded into individual systems, for local discovery. Perhaps one larger institution could create a centralized system, receiving and loading all records, and offering accessible search services.

2) Decide to collect simple, or "slightly" qualified, Dublin Core records describing each collection. The larger institutions might extract archival collection MARC records and convert these to DC. Perhaps they could even share maps and conversion tools. Those institutions without any collection-level descriptions would need to create such records. The advantage, if any, of this option over #1 is that DC records may be easier for some organizations to create than a collection-level MARC record, and some institutions in the consortium may not have any need or use for MARC records. Also, if a discovery system does not already exist and must be developed or acquired, the range of solutions will be much greater, and probably less expensive, if the input data is DC as opposed to MARC (why? MARC is a library-centric data format and data model; it's true that MARC can be expressed in XML, getting away from the format problem, but it's still much more "peculiar" than DC, meaning that there won't be as many non-library solutions).

Scenario B: The key functional requirements here are that the state wants "in-depth descriptions" of archival collections, and they want "sophisticated fielded searching capability." Thus collection-level records alone will not do—we need a more complete description of the components of collections, such as you'd get in an archival guide or collection registry. The good news is that such guides are currently being produced, so the expert practice and knowledge about in-depth descriptions is already in place. The other good news is that the state is apparently willing to devote funds to this (as opposed to Scenario C).

What's the bad news? The current guides are being published on paper, for local inspection, and in HTML for web delivery. The guides are produced in MS Word and then easily converted by that software to HTML. The problem is that HTML will not provide good fielded searching. There is no reliable way for a machine to distinguish and separately index the different components of a guide encoded in HTML. You can see this in the HTML example—the HTML "tags" dictate page and character formatting, they don't make the kind of semantic distinctions as we see in EAD. This kind of problem is compounded when the guides are being produced by

multiple sources (any uniform HTML encoding practices that may result merely from being generated by a single producer will be lost when you have many producers).

We are thus pushed in the direction of EAD to satisfy the desired functional requirements. EAD would give us in-depth descriptions, as well as the rich XML encoding that would support fielded searching.

EAD is quite promiscuous, in the sense that it is extremely flexible in how content is encoded in it—there are many different ways one can encode an archival guide in EAD. So once the decision is made to use it, the first business of the consortium will be to bring together archivists from all member organizations and decide on an EAD best practice. This would describe the elements to be used, with various content value recommendations. Help in this area is available from such documents as RLG's "Best Practice Guidelines for Encoded Archival Description."

Scenario C: This scenario is identical to Scenario B, except for the constaints, which in effect changes the functional requirements for this project. The difference here is that the state does not insist on fielded searching, and they don't have resources to put into this project. They want something done quickly and inexpensively.

The solution here is fairly easy: establish a method for collecting HTML archival guides from all organizations, and index these together in a searchable system. It would be a bit like a Google search—simple entry form, no field selection possible—and you'd get back a simple hit list of archival guides. Clicking on one of these would take you to the complete HTML guide.

It would be nice to get an accurately rendered title for every collection, to display in search results or perhaps on a browse list. This might be built into the submission process (submitters fill in the title of the collection in some form), or if everyone in the consortium agreed to a common encoding practice (such as putting the collection title in the HTML <head><title> element), then the title could be captured even more easily.

You could provide at least one search field limitation very inexpensively. That would be for repository—where the content is held. You would have this information because you would know where the guide was submitted from. So users could, if they wanted, ask to search only archival materials held at University X, for example.

Scenario D: This is an interesting scenario and points out some weaknesses, or limitations, of EAD. EAD was designed to encode (to capture the information of) published archival guides. But there is a lot of additional information that is necessary to the assessment and management of archival collections, as a custodian. Some of this information is what this particular institution is interested in: information about donors or the estimated worth of archival materials.

So those working on this scenario should notice that EAD does not appear (from the example) to be capable of capturing this type of collection management information. There is no very clear solution. Some participants may be familiar with some software that offers more management capabilities. In any event, this is what the solution would likely involve—obtaining a system that

allowed for this extra information. Ideally such a system would be capable of including EAD within it, or generating it, so that a publishable guide could be pulled from the system as well.

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Exercise 4: Metadata Mapping Exercise

Source Metadata (native publisher metadata)	Transformation Rules	Target Metadata (simple DC)
journal_issue/record/title	Take source element as is. If multiple title elements in source, take all; each source title gets a separate dc:title element.	**Title**
Discussion: Multiple titles can occur (see one of the articles on page 37). Should both go in? It would likely improve discovery, so why not. Is order important? This will depend on how the resulting DC data is used. The most "important" title should probably go first. Should we worry about initial articles (removing them, moving them, leaving them alone)? Initial articles can be difficult to deal with in a reliable manner, especially across languages. Like all decisions here, we can ask why we would remove them. If we, or a group we are sharing these DC records with, wants to create title browse lists, then there may be a good reason to consider this. But otherwise, it's probably better to avoid if possible.		
		Contributor
Discussion: There are no examples of anything that would go into dc:contributor, so it will be difficult to define the mapping for this element. This illustrates the difficulty of creating metadata maps without complete examples illustrating every possibility within the source data, or, what is probably better, the source metadata rules themselves (a DTD or XML Schema), where all possible elements are defined. Without this, we can only guess how a contributor (a translator perhaps, or editor) might get encoded in the source data, if it is encoded at all. There is talk within the DC community, particularly among librarians, about the problems associated with Creator and Contributor, and to some extend Publisher. The argument is that these are roles having more to do with the agent in question than with the resource being described. Some have suggested using only the Contributor element for all "agents" (in lieu of a DC Agent element). Such a solution, however, illustrates the tension between "correctness" and "usefulness." The problem is that many users of DC are not librarians and will continue to use Creator for author names (since that makes the most common sense). If most DC users put author names in the Creator element, but the library community puts them in the Contributor element, what impact will this have on sharing DC data?		
		Coverage
Discussion: Probably not used here. According to the DC definition and comment, there is no appropriate use for this element with this material (mathematics literature). "Mathematics" itself is a subject.		

journal_issue/record/author/name/…	Surname element first, comma, space, then given_name. Every author name in its own dc:creator element.	**Creator**

Discussion:

The source data here is rich enough that we have some options on how we render names. We can easily go with an inverted or non-inverted format. How we decide will depend on our intended use of this data, community practice, and with whom we will be sharing this DC metadata. Most DC recommendations are for inverted order, or whatever order will sort appropriately in an alphabetized list.

Note that on page 36, an author has a name suffix: Jr. What to do with that, particularly if we go with inverted names. Catalogers will have a particular way to handle this, but one could propose just dropping such suffixes. What are the reasons not to? (It may provide important distinguishing information. Since it is not encoded separately, it may be hard to reliably detect all name suffixes.) With DC, there's often no right answer, but there may be better and worse answers.

journal_issue/issue_date/ issue_publ_date	Use the iso8601 attribute value	**Date**

Discussion:

There are two dates in this data, and one of them is rendered in two ways. One date is the issue publication date, and it has two formats. The other date is some sort of timestamp, probably when the resource was entered into the system. Going back to the overall guideline of improving discovery, it is the issue publication date that is of use to end-users. A system timestamp won't be of much help to anyone trying to discover this resource.

As to which of the two formats of the publication date to use, the DC community recommends using a standard format. Since we have that, we should use it, as is.

journal_issue/record/abstract/p	Collapse all <p> elements into the same dc:description. Replace all <math> elements with alttext attribute value. Remove HTML tags, <i> and <b>.	**Description**

Discussion:

DC Abstract is an element refinement, refining Description. This strongly suggests that if we want to include the source data's abstract in a DC record, it should go in Description. One thing that often gets overlooked…what to do if an abstract has multiple paragraphs? You could use another description element, but that implies it is another description, when in fact it's part of the same one. You could just cram them together, separated by a space. Or cram them together separated by some other symbol, like a paragraph mark. Again, there is no right answer.

Another issue that this data raises is what to do with any internal markup, such as on page 35 and 36. Such markup is not allowed inside a simple DC element. The internal markup on page 36 has the easier solution. This particular markup is MathML (Mathematical Markup Language), and the trick here is to notice that every math expression, enclosed in a <math> element, has an "alttext" attribute. This attribute holds something called the LaTeX encoding of the math expression. This is an ASCII text version that is equivalent to the MathML version, and it could thus be substituted for each MathML <math> element.

But what if there is HTML in the abstract, as on page 35? This is character formatting, for italic and bold. You have to make a hard decision whether to delete the character formatting and leave bare text, or omit the entire abstract. In this case, we'd probably decide to strip it out, because what is left is still intelligible, and having an abstract in the record improves discoverability. But what if the character markup was a bit more complex, like "E=mc²". Would you be comfortable reducing this to "E=mc2"? Is that preferable over leaving the entire abstract out of the record? There is no easy solution.		
journal_issue/record/ record_filename	Map type attribute value to appropriate MIME type.	**Format**
Discussion: There is a clue in the source metadata about file type. Presumably there might be different file types. But these indicators ("pdf") would need to be mapped within the conversion program to the appropriate MIME Type. For PDF files, that is "application/pdf". So one would have to assemble a table, with a complete list of file types used in the source data, paired with the correct MIME type.		
Various journal_issue/issue_data elements, and page elements from first and last records. journal_issue/record/ identifier@type=doi	Build a single dc:identifier element in this way: [journal_citation_name] [journal_vol_number], No. [issue_number] ([issue_publ_date]), [start_page of first record]—[end_page of last record]. Include all DOIs, prefaced with "doi:"	**Identifier**
Discussion: An important identifier will be citation information. Looking through element refinements, we can see that the DC community has accepted that this type of information is considered a type of Identifier (the element refinement bibliographicCitation is a refinement of Identifier). This is where you would put journal title, volume number, issue number, date of publication, and page range, in some formation. Disciplines may have particular citation styling conventions. The Digital Object Identifier, if present, is a universally accepted and understood identifier and should be included in a DC record. To be correct, the DOI should begin with "doi:", but this could easily be done in the conversion. Another identifier in the source metadata is a "pii" or Publisher Item Identifier. PII's are peculiar to individual publishers, used for internal purposes, and likely have no meaning outside of a particular publishing operation. Therefore, there is not much reason to include them in a widely distributed DC record.		
journal_issue/record	Use lang attribute value	**Language**
Discussion: This is a little tricky, since there are lang attributes on a number of elements. The most likely indicator of the language of the article, which is what we're after, is the lang attribute on the record element. These codes are already in a recommended form (ISO 639-1, alpha-2), so they could be used as is. Perhaps they should be lowercased—ISO 639 is case insensitive, though it suggests lowercase.		

journal_issue/issue_data/ publisher	Use as is.	**Publisher**
Discussion: Straightforward.		
journal_issue/issue_data/issn	Use as is.	**Relation**
Discussion: The DC record describes an article. That's why the ISSN should not be included as an Identifier, since the ISSN identifies the journal, not the article. But Relation includes the element refinement "is part of", which accurately fits this relationship between an article and its journal (article "is a part of" a journal).		
Various journal_issue/issue_data elements.	Build a dc:rights element in this way: © [first 4 digits of issue_publ_date iso8601 attribute value] [publisher]	**Rights**
Discussion: There is nothing in the source that directly maps to this. You would have to decide on what was appropriate for the rights statement. One typical usage is to include a copyright symbol or statement, year of publication, and the publisher name. But other options exist, such as a generic statement about what is and is not permissible without further authorization, or even a link to such a statement.		
		Source
Discussion: DC Source has a fairly restricted use—the analog source for digitized material. If that distinction isn't important, or even valid, then we shouldn't use Source. With the journal material at hand, it is not clear that the analog, or print, is really a "source" for the electronic at all.		
journal_issue/record/keywords/… journal_issue/record/subjects/…	Make every keyword and subject element a separate dc:subject element.	**Subject**
Discussion: The subject terms in the source data clearly come from some sort of controlled vocabulary scheme, but simple DC offers no easy way to identify particular vocabularies.		
Not in source data.	Use "Text"	**Type**
Discussion: The interesting thing about this element is that it cannot be directly obtained from the source data. It will be added programmatically to every DC record we generate. We know the element value to use because most all journal literature by nature falls into the DCMI Type category of "Text".		

Metadata and Digital Library Development
Appendix I—Glossary

Agile Software Design A software development methodology and framework that emphasizes short development horizons, maintaining workable software, and intensely collaborative development work (such as pair programming). Agile methodologies are particularly good at adapting to changing environments or user/customer needs.

Application Profile "In DCMI usage, an application profile is a declaration of the metadata terms an organization, information resource, application, or user community uses in its metadata. In a broader sense, it includes the set of metadata elements, policies, and guidelines defined for a particular application or implementation. The elements may be from one or more element sets, thus allowing a given application to meet its functional requirements by using metadata elements from several element sets including locally defined sets. For example, a given application might choose a specific subset of the Dublin Core elements that meets its needs, or may include elements from the Dublin Core, another element set, and several locally defined elements, all combined in a single schema. An application profile is not considered complete without documentation that defines the policies and best practices appropriate to the application." M. Woodley, DCMI Glossary. 2004.
Available at: http://www.dublincore.org/documents/usageguide/glossary.shtml

Crosswalk "A table that maps the relationships and equivalencies between two or more metadata schemes. Crosswalks or metadata mapping support the ability of search engines to search effectively across heterogeneous databases." M. Woodley. DCMI glossary. 2004.
Available at: http://www.dublincore.org/documents/usageguide/glossary.shtml

Digital library "One thing digital libraries will not be is a single, completely digital system that provides instant access to all information, for all sectors of society, from anywhere in the world. This is simply unrealistic. This concept comes from the early days when people were unaware of the complexities of building digital libraries. Instead, they will most likely be a collection of disparate resources and disparate systems, catering to specific communities and user groups, created for specific purposes. They also will include, perhaps indefinitely, paper-based collections." Gary Cleveland. "Digital Libraries: Definitions, Issues and Challenges." *UDT* Occasional Paper #8. International Federation of Library Associations and Institutions. 1998.
Available at: http://www.ifla.org/VI/5/op/udtop8/udtop8.htm

Digital library "Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities." Digital Library Federation. 1998.
Available at: http://www.diglib.org/about/dldefinition.htm

Digital library "A collection of information packages in digital form that are selected, brought together, organized, preserved, and to which access is provided over digital networks for a

particular community of users." Arlene G. Taylor. The Organization of Information. 2nd edition. Englewood, Colo.: Libraries Unlimited, 2004.

Digital library "…a library in which a significant proportion of the resources are available in machine-readable format (as opposed to print or microform), accessible by means of computers. The digital content may be locally held or accessed remotely via computer networks." Digital library. (2006, August 8). In Wikipedia, The Free Encyclopedia. Retrieved 18:42, August 13, 2006, from http://en.wikipedia.org/w/index.php?title=Digital_library&oldid=68320437.

Digital library *See also*: Association of Research Libraries definition, from 1995: http://www.arl.org/arl/proceedings/126/2-defn.html

ILS (Integrated Library System), or LMS (Library Management System) Enterprise level software used in libraries to manage all aspects of information resources, both digital and physical. Assists in various functions, such as acquisitions, cataloging, circulation, and many others. Will typically include a public interface (OPAC).

Interoperability "The ability of different types of computers, networks, operating systems, and applications to work together effectively, without prior communication, in order to exchange information in a useful and meaningful manner. There are three aspects of interoperability: semantic, structural and syntactical." M. Woodley. *DCMI glossary*. 2004. Available at: http://dublincore.org/documents/usageguide/glossary.shtml

Library Bibliographic System A very abstract term for the system (electronic or analog) in place within libraries to allow users to access materials. A conceptual system allowing users to access library materials. Manifestations of a library bibliographic system would be a card catalog, an OPAC, and Integrated Library System, etc.

Metadata mapping See **crosswalk**.

OAI (Open Archives Initiative) An initiative to provide and maintain a protocol (OAI-MHP) that allows for machine harvesting of metadata records.

OPAC (Online Public Access Catalog) An electronic version of the library catalog. It has replaced the card catalog in most libraries, often providing much greater functionality and features. An OPAC is part of most modern Integrated Library Systems.

Rational Unified Process A software design and development process emphasizing iterative development, requirements tied to end-user needs, component-based software design, and the management of expected transition and change (in users' needs, technical environment, and supporting systems).

Use case A method of articulating the precise requirements for a single, specific system feature. A use case will typically describe a scenario, which represents a single complete interaction between the system and some external "user." The user may represent a class of users (general users, data entry staff, administrators, etc.), or another system (a statistics gathering system, a

backup system, an authentication system, etc.). Use cases do not explain how the requirements described are carried out or implemented. Taken together, all the use cases of a proposed system represent the functional requirements of that system.

User centered design An approach to design, including software design, which emphasizes and privileges actual users and their behavior in the design process. The idea is that systems so designed will better meet the real needs of users, as opposed to asking users to adjust their behavior to a specific system. User centered design processes include extensive user behavior analysis in their requirements analysis phase, combined with substantial follow-up testing and assessment with real-world users.

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Metadata and Digital Library Development
Appendix II—Selected Bibliography

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Metadata Formats:

CDWA Lite (Categories for the Description of Works of Art)
http://www.getty.edu/research/conducting_research/standards/cdwa/cdwalite.html

Dublin Core Metadata Initiative
http://dublincore.org

EAD (Encoded Archival Description)
http://www.loc.gov/ead

See also: RLG Best Practice Guidelines for Encoded Archival Description
http://www.rlg.org/en/page.php?Page_ID=450

MARC
http://www.loc.gov/marc

METS (Metadata Encoding and Transmission Standard)
http://www.loc.gov/standards/mets

MODS (Metadata Object Description Schema)
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http://www.getty.edu/research/conducting_research/standards/intrometadata/path.html

See also:
http://www.loc.gov/marc/marcdocz.html
http://libraries.mit.edu/guides/subjects/metadata/mappings.html
http://staffweb.library.northwestern.edu/dl/metadata/standardsinventory

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Evaluation Form
Metadata and Digital Library Development

Your evaluation of this workshop is very important to the future development of this course and other similar courses. Your honest, candid answers to the following questions will assist us in providing quality programs.

Please rate the following aspects of today's workshop by checking the box that best reflects your evaluation:

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1. The overall content of the workshop:

	5	4	3	2	1	
a. was extremely valuable						was of little value
b. provided enough detail						was too general
c. was current & relevant						was outdated
d. was cohesive & logical						was fragmented/difficult to follow
e. was appropriate to my needs						was not at all appropriate
f. met its stated objectives						did not meet objectives

2. Presenter:

	5	4	3	2	1	
a. was knowledgeable						was unsure of the material
b. had good presentation skills						had poor presentation skills
c. encouraged participation						discouraged participation
d. addressed my level of understanding						did not consider my level
e. answered questions directly						did not answer questions
f. was prepared						was not prepared
g. understood the audience dynamics						ignored audience dynamics

3. Presenter:

	5	4	3	2	1	
a. was knowledgeable						was unsure of the material
b. had good presentation skills						had poor presentation skills
c. encouraged participation						discouraged participation
d. addressed my level of understanding						did not consider my level
e. answered questions directly						did not answer questions
f. was prepared						was not prepared
g. understood the audience dynamics						ignored audience dynamics

4. The handouts:

	5	4	3	2	1	
a. are excellent						are poor
b. followed course content						are disjointed/out of sequence
c. are valuable for future reference						are of no value

5. The PowerPoint slides:

	5	4	3	2	1	
a. were clear and easy to read						were hard to read
b. were well organized						were poorly organized
c. illustrated concepts clearly						were confusing
d. covered an appropriate amount of information						contained too much or not enough information
e. were visually effective						were not effective
f. were enhanced by and supported the presenter's remarks						were poorly related to the presenter's remarks

Please give the following information about yourself:

6. Your level of knowledge in the subject of this workshop before today: expert 5 4 3 2 1 novice

7. Your level of experience in the subject of this workshop before today: very experienced 5 4 3 2 1 beginner

8. Other comments:

Comments on specific sessions:

THANK YOU!