GENERAL RESOURCES ON METADATA

This chapter focuses on Web-related efforts to provide a clearinghouse approach to current activity in metadata standards. Some of these sites are the results of funded projects that have concluded, so the information has not been maintained and is dated; however, these pages are still important one-stops about various metadata standards and their development.

Available resources

Books

Two books are essential references about metadata. The first is *Getting Mileage out of Metadata: Applications for the Library.* (Hudgins, 1999) This resource not only describes the major metadata standards, the communities producing them, and the current states of development but also guides the reader through planning and implementing a metadata project.

The second book, available as a free Web publication, is *Introduction to Metadata: Pathways to Digital Information.* (Baca, 2000) Its topics include:

- The definition of metadata and a discussion of its importance

- The importance of using metadata to describe and organize digital information

- The importance of metadata interoperability and cross-domain searching

Many metadata crosswalks and a glossary are included.

Introduction to Metadata: Pathways to Digital Information, www.getty.edu/research/ institute/standards/ intrometadata

Newsletters

The quarterly newsletter, *Metadata Watch Report,* issued by the SCHEMAS Project, is an excellent resource for the status of many metadata standards.

SCHEMAS looks at the diverse and often confusing landscape of emerging metadata standards from the viewpoint of project or service implementers who must use these standards to design their interoperable schemas. The newsletter is written in the context of European metadata initiatives. The newsletter also reports activities accomplished in metadata standards and the user communities that implement them.

Metadata Watch Report, www.schemas-forum.org/ metadata-watch

Web clearinghouses

Consult the many good metadata clearinghouses on the Web for information on metadata standards. Although some of these sites have not been maintained, all provide links to the official Web sites of the metadata standards.

International Federation of Library Associations and Institution's (IFLA) Digital Libraries: Metadata Resources

www.ifla.org/II/metadata.htm

This site has not been maintained since 2000 but is one of the largest

metadata clearinghouses available, with links to articles published from 1994 to 2000. The value of this Web site is its historical significance, since links to many of the early implementation strategies and philosophies articles appear here. Links to the many metadata standards Web sites, though, may not work.

Cataloguer's Toolbox Metadata standards, crosswalks, and standards organizations

www.mun.ca/library/cat/standards.htm

This up-to-date Web site is divided into the following categories: bibliographic and Internet standards organizations, general metadata, controlled vocabularies, crosswalks between metadata frameworks, Dublin Core, Encoded Archival Description (EAD), identifier standards for electronic resources (URLs, URNs, SICIs, BICIs, DOI), publishing industry metadata standards, Resource Description Framework (RDF), Standardized General Markup Language (SGML), Text Encoding Initiative (TEI), eXtensible Markup Language (XML), and Z39.50 and their various profiles.

UK Office for Library and Information Networking

www.ukoln.ac.uk/metadata

This resource is always cited as a good reference resource on metadata, but it has not been actively updated since 2000. It is divided into projects, resources, initiatives, and registries. To view to specific metadata standards, click Links to metadata resources under Resources.

Diffuse Project Metadata Interchange Standards

www.diffuse.org/meta.html

This site provides an extensive listing of metadata standards compiled by the Diffuse Project. Each standard is given a listing in this clearinghouse, with extensive descriptions of characteristics and usages. Links to official Web sites are provided, as well as references and links to online articles.

Modeling a Metalevel Ontology

www.fis.utoronto.ca/special/metadata/overview.htm

This Web site was created by principal investigator Lynne C. Howarth, a professor of library science at the University of Toronto and a metadata authority. This particular Web site is a brief overview of seven metadata standards (CIMI, Dublin Core, EAD, FGDC, GILS, ONIX, TEI, and VRA), providing general information, purpose and goals, what is the standard, and current projects.

DESIRE Project—A review of metadata: A survey of current resource description formats

www.ukoln.ac.uk/metadata/desire/overview

This resource was the most comprehensive listing of metadata standards at the time of its publication (1999) and was created in preparation for the construction of a metadata registry concept (listed in the Metadata Registries section of this chapter below). This review is a massive document (almost 200 pages), and much of the information is still valid for existing metadata standards. Each standard is examined in terms of environment of use, format issues, protocol issues, and implementations.

Colorado Digitization Project Metadata Page

http://coloradodigital.coalliance.org/access.html

The Colorado Digitization Project (CDP) is a prominent statewide digitiza-

URL: uniform resource locator

URN: uniform resource name

SICI: serial item and contribution identifier

BICI: book item and contribution identifier

DOI: digital object identifier

CIMI: Consortium for the Interchange of Museum Information

GILS: Global Information Locator Service

ONIX: Online Information Exchange (ONIX)

VRA: Visual Resources Association

tion project and has been a vital resource and case study for information on digitization and metadata projects incorporating multiple information organizations and people. CDP's metadata page is divided into Standards, Open Archives Initiative, SGML and XML, Vocabularies, and Metadata Generators.

Joint Workshop on Metadata Registries (related Web pages)

http://pueblo.lbl.gov/~olken/epalinks.html

This listing of metadata standards and projects is geared toward the government and scientific communities. The page has not been updated since 1999 but is still a good source for metadata information in these fairly well-defined and narrow areas. The page is divided into Metadata Registries Workshops, Future Conferences, Past Conferences, U.S. Environmental Protection Agency (EPA), State EPAs, FGDC, Internet Engineering Task Force (IETF), NASA, Ontologies and Interchange Formats, XML and RDF, SGML, Standards Organizations, Measurement Units, World Wide Web Consortium, Vendors, Related Software/File Formats, Code Sets, EDI, and Library Metadata (Cataloging).

"Metadata: Cataloging by any Other Name," by Jessica Milstead and Susan Feldman

ONLINE, January 1999

www.onlinemag.net/OL1999/milstead1.html

This article is a classic in the area of metadata. Not only is the article a wonderful introduction, but it is accompanied by an extensive companion article titled "Metadata Projects and Standards" that provides a great overview of the topic circa 1999. Look closely at "Sources of Metadata Information on the Web" in the companion article.

"Metacrap: Putting the torch to seven straw-men of the meta-utopia"

www.well.com/~doctorow/metacrap.htm

This controversial online article details and disassembles the utopian viewpoints regarding the use of metadata to solve the problems of finding and describing digital information. Although not particularly authoritative, the article is amusing and raises questions about the future uses and abuses of metadata to describe digital objects.

Metadata registries

Metadata registries are dynamic databases that depend on manual input of information from users and organizers of metadata standards, and the automated sharing of metadata terms across Web applications. Metadata registries contain databases of schemas that trace their roots to the idea of shared data dictionaries. The currency and accuracy of information on these registries depend on the goodwill and input from the metadata standards community. Assessing the success of these registries is difficult, but these registries attempt to provide up-to-date progress on the standards, so they must be consulted regularly by information organizations and people using metadata.

Current Cites (Bibliography On-Demand)

http://sunsite.berkeley.edu/CurrentCites

Current Cites can produce an extensive, current bibliography on metadata by using its Bibliography On-Demand feature. The dynamic database produces all articles in Current Cites on metadata from January 1994 to whatever date the search is entered. As of July 2002, 60 articles were listed on metadata.

SCHEMAS Metadata Registry

www.schemas-forum.org/registry

This registry holds links to elements and definitions of schemas, both formal standards or schemas designed for specific projects. The registry also links to metadata activity reports derived from the SCHEMAS Metadata Watch service. The registry covers metadata relating to a broad range of functional requirements, from resource discovery to rights management and digital preservation. The registry serves as a best-practice example of registry use and benefits; details of its configuration will be made available as a technology baseline for other registry implementers. The SCHEMAS registry is based on the DESIRE prototype.

DESIRE Metadata Registry

http://desire.ukoln.ac.uk/registry

Based on the Desire Project document listed above, this registry implements an Resource Description Framework (RDF) (see Chapter 3 for more information about RDF) and allows both browse and search functions related to the following information: registration authorities, namespace concepts, namespaces, semantic units, elements, representation classes, schemes, and application profiles. The user also can generate a glossary dynamically, as well as crosswalks between any of the listed metadata standards and formats.

A **namespace** is a set of names in which all names are unique.

ROADS Metadata Registry

www.ukoln.ac.uk/metadata/roads

The objective of the Resource Organisation and Discovery in Subject-Based Services (ROADS) project is to design and implement a user-oriented resource discovery system. ROADS investigates the creation, collection, and distribution of resource descriptions, and it provides a transparent means of searching for and using resources. The ROADS' objective is not to create an individual and idiosyncratic system but to draw on—and help create— standards of best practices that can be widely adopted by subject communities to aid and automate the process of resource organization and discovery. A primary goal of the project is collaboration with other national and international services, such as the IETF working groups and United Kingdom and international consensus-making bodies at technical, service, and organizational levels.

Metaguide—Subject Catalog, and Metaform (database containing Dublin Core manifestations and other metadata formats)

http://www2.sub.uni-goettingen.de/metaguide/index.html

http://www2.sub.uni-goettingen.de/metaform

This dynamically generated subject catalog on metadata is divided into general metadata references, formats, evaluation and reports, projects, projects by region, projects by institution, projects by academic discipline, metadata for special aspects, Web environment, software tools, metadata and library formats, support (help), workshops, and discussion. Although the registry appears to be comprehensive and authoritative, entries are few. The information there, however, is useful.

Metadata Information Clearinghouse Interactive (MICI)

www.metadatainformation.org

This site was initiated by the Metadata Subcommittee of the Enabling Technologies Committee of the Association of American Publishers (AAP). It serves as a clearinghouse of information about metadata projects, standards, and initiatives. The registry is well-organized and can be searched by category (application, customer type, end user type, medium, publisher type, subject area), project name, project type, sponsor, URL, author, date, and all documents (author, date). This registry is active in use and contribution.

Dublin Core Metadata Initiative (DCMI) Metadata Registry

http://wip.dublincore.org:8080/registry/Registry

This site is under development but presents three application prototypes being developed and analyzed by the Dublin Core Metadata Initiative (DCMI).

Metadata tools and initiatives

Many metadata tools and utilities can assist libraries in the automatic generation of metadata conversion from one standard to another, or to generate metadata automatically through Web templates or software programs. A list of the major Web sites and programs is provided below:

- Tools and software for generating Dublin Core metadata (especially useful for those implementing Dublin Core), http://dublincore.org/tools

- UKOLN metadata software tools (list of available freeware and commercial metadata software tools), www.ukoln.ac.uk/metadata/software-tools

- USGS tools for creation of formal metadata (useful for those implementing geospatial metadata), http://geology.usgs.gov/tools/metadata/tools/doc/faq.html

- MetaWeb Project: Analysis of Metadata Creation Tools (provides reviews and analysis of some of the available metadata creation software programs), www.dstc.edu.au/Research/Projects/metaweb/toolpost.html

- Meta Matters tools (another list of available freeware and commercial metadata software tools), www.nla.gov.au/meta/tools.html

Numerous companies offer digital and digitization software packages that include metadata tools. Some companies are listed below.

- MetaPackager, www.hisoftware.com/metapackager.htm

- Colorado Digitization Project: software resources (list of companies and products), http://coloradodigital.coalliance.org/software.html

- Macromedia Cold Fusion MX, www.macromedia.com/software/coldfusion

- ESRI ArcGIS, www.esri.com/software/arcgis/arcinfo/index.html