The Development of the NISO Committee AX's OpenURL Standard

Arthur Hendricks

This paper describes the development of the OpenURL standard and how it will impact librarians and information technologists. This article is based on information provided via email inquires sent to members of the National Information Standards Organization (NISO) Committee AX responsible for producing this standard. The OpenURL syntax is designed to enable transportation of metadata and identifiers about referenced works and their context from any information resource to a local link server. This allows libraries to create locally-controlled and managed link servers that enable the delivery of context-sensitive linking in and across their collections.

OpenURL is a developing standard that provides a mechanism for transporting bibliographic metadata about objects between information services via the Internet.[1] The standard is based on the idea that links should lead a user to appropriate resources. Currently, Web links do not take into account the identity of the user as they link to the same Web page. When more than one institution provides access to copies of the same electronic article, the link from the citation to the full-text article should point to a copy that is available to the user. Since different users have access to different resources, the link should resolve who gets what. The link must be able to package metadata and identifiers describing the information object, and send this package to a server that resolves the link. The resolver should take into account the user's identity when resolving the metadata into specific articles.

In the OpenURL framework, information resources allow for open linking by including a hook, a programmer-defined customization, along with each metadata description that they present to users. This hook presents itself in the user's browser as a clickable link called an OpenURL.[2]

This article describes the development of the OpenURL standard and how it will impact librarians and information technologists. Much of the information provided here was obtained via e-mail inquiries sent to members of the National Information Standards Organization (NISO) Committee AX responsible for producing the OpenURL standard. See appendix A for the list of questions submitted to the committee members. This standards committee, formally designated NISO AX, consists of seventeen members and four observers from diverse backgrounds and workplaces (libraries, publishers, and service providers.) See appendix B for complete biographical information on the respondents.

History

The OpenURL concept evolved from research by Herbert Van de Sompel and his team at the University of Ghent in Belgium.[3] In 1998 they began to explore the role of local link servers for libraries to facilitate context-sensitive linking between heterogeneous scholarly resources.[4] As a result of this work, the first context-sensitive link server, titled SFX, was developed. Ex Libris was one of the technology partners involved in this experimental work, and Oren Beit-Arie, Ex Libris Group vice president for research, was assigned to the project. In February 2000, Ex Libris purchased all rights to develop and market the SFX technology.[5] SFX-URL was developed as a protocol for transporting metadata from sources to the SFX server.

In March 2000, Van de Sompel, Hochsteinbach, and Beit-Arie began work on a general framework to enable a standardized infrastructure for open and context-sensitive linking. This led to the creation of the first draft of the OpenURL standard, which was posted publicly in April 2000 at www.sfxit.com/openurl.html, and they subsequently published an article summarizing the OpenURL standard in *D-Lib Magazine*.[6]

In December 2000, Van de Sompel and Beit-Arie submitted the OpenURL specifications to NISO for its official standardization. The OpenURL standard was accepted as a fast track work item.[7] NISO is a nonprofit association accredited by the American National Standards Institute (ANSI). Its charge is to identify, develop, maintain, and publish technical standards. NISO standards apply both traditional and new technologies to information-related needs, including retrieval, storage, metadata, and preservation. The working draft of the OpenURL standard is available at http://library Caltech.edu/openurl/Working _Documents.htm.

Scope and Application of the OpenURL Standard

The AX committee members were each asked to describe the scope and application of the OpenURL standard and state what problems the standard addresses. Most stated that it was originally developed for providing context-sensitive linking in a scholarly Web-based information environment. According to Ann Apps, researcher for Manchester Information and Associated Services, "The current draft OpenURL (version 0.1) of the standard defines 'by-value' metadata for particular bibliographic resources (or referents) (journals and articles,

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conference proceedings and papers, books). It also defines the resolver to which the metadata is sent as a BaseURL."[8]

As for the future applications of OpenURL, most committee members saw it as being useful for a variety of objects on the Internet, not just scholarly citations. According to Van de Velde:

> Within the scholarly literature, localized services could be attached not only to citations, but also to keywords, mathematical and chemical formulas, genome sequences, etc. Outside of the scholarly environment, localized services could be attached to real-estate listings, news stories, stock listings, etc.[9]

According to Apps, version 1.0 of the standard will include the description of other entities: the referring service, the referring entity within that service, the requester, the service type requested, and some administrative metadata detailing the OpenURL version number and identifying it as an OpenURL. It will allow description of the resource using identifiers, or using *by reference* as well as *by value*. The initial set of by value metadata will be bibliographic, but there will be a mechanism for communities to register metadata formats, so potentially OpenURL could be used for any type of resource.

OCLC is already utilizing Open URLs. According to Phil Norman, OCLC is undertaking analysis and design of an initiative that will include a centralized, cooperatively built database that identifies what electronic journals exist, who provides them, and what libraries have rights to use them. This application will be OpenURL aware.[10]

ProQuest is also implementing OpenURLs. According to Todd Fegan, the primary focus initially was to build OpenURLs for the purpose of outgoing links from their indexed records to the full text that resides outside of ProQuest. "Our view has changed slightly in that we are now looking to standardize our linking on the OpenURL whether its internal linking, inbound, or outbound. Links between our platforms will most likely be OpenURL based. The standard does allow for a 'local zone' so we can incorporate product specific information if we need to."[11]

Other Metadata Standards

While other metadata standards, such as Dublin Core (DC), OAI, ONIX, MARC, Z39.50, and so on, continue to be vital standards in the Web environment, OpenURL is different in such a way that it adds natural intelligence to the computer-to-computer process to navigate complexity, and OpenURL resolvers don't take metadata and immediately hand off whatever resources come up—a process that will frequently fail because the metadata is incomplete or because the source database and the object resource follow different rules. Instead, resolvers apply as much logic as they can, then offer the user a menu showing a range of possibilities.[12]

The committee members were asked how the OpenURL standard differs from other metadata standards and whether OpenURL would affect other metadata standards. Most stated that OpenURL is not a metadata format in itself, but a means of transporting metadata. Apps stated,

> OpenURL is transportable metadata and it is primarily concerned with bibliographic resources. It is really defined for linking to other resources, whereas DC is concerned with metadata about a resource itself. It has a defined syntax, whereas DC has defined semantics which can be used within various syntaxes. OAI is about disclosing/harvesting metadata, not about providing links.[13]

Apps also stated that OpenURL could be employed within DC to record the bibliographic citation of a journal article. Unlike DC, OpenURLs are not human-readable and therefore not very suitable for resource discovery results. It is possible that XML schemas will be developed for OpenURL. If so, these could be used by both DC and OAI as schemas for encoding bibliographic citation information. "It appears that OpenURL is the first standard to standardize the elements of a bibliographic resource citation."[14]

Norman added:

> It is envisioned that the OpenURL registry will allow new metadata formats to be created using XML schemas. Existing metadata formats such as MARC XML can also be registered once the registry is made public. Additional metadata encoding or transport methods such as RDF and Relax-NG may be added later in order to extend the use of existing metadata formats such as Dublin Core.[15]

Impact on Libraries

The benefits of the OpenURL standard to libraries and information service providers are enormous. Recently Research Libraries Group (RLG) revealed its full support for OpenURL dynamic link creation in the newest version of Eureka. "Eureka now enables librarians and their users to find virtually everything the library can provide, both online and on the shelf," said Walt Crawford, senior Eureka analyst at RLG.[16] Ex Libris's product SFX allows users to search a database and click on a resulting citation to search it automatically in other databases. Other library systems vendors such as Endeavor and Innovative Interfaces Incorporated (III) also are developing products with support for OpenURL. The committee members were also asked how they see the introduction of the OpenURL standard impacting libraries.

Van de Velde replied, "The most important impact is that users are

guided to resources they've never even heard of, just by clicking on some of the options available on the menu of services. It makes it easier on the library to let users know what is available."[17]

According to Beit-Arie:

> Primarily it enables libraries to take control of their own linking environment. Libraries can determine what resources should be linked and in what manner. With the OpenURL open linking framework, libraries can also incorporate local resources and services into their interlinked environment. Further, libraries can consolidate the maintenance of links via their OpenURL link server.[18]

He also pointed out that OpenURL virtually changes the way patrons navigate and use electronic resources. The fast acceptance of the standard in the scholarly information industry at large, considering it was only first published in April 2000, attests to that.[19]

Apps wrote that libraries will be under pressure to purchase OpenURL resolver software to provide their users with full-text links.[20] Using a resolver seems to require a large overhead in maintaining holdings information. She also stated that libraries probably will not need to encode OpenURLs unless they want to include them in custom-made OPACS.[21] OpenURLs are generally provided in source abstracting and indexing databases. Libraries will have to provide help and training to their users to explain OpenURL links and functionality.

When asked what potential library projects would benefit most using the OpenURL standard, Van de Velde stated succinctly, "The usefulness of any database is enhanced when it is OpenURL enabled, because the database can now be used to deliver localized services."[22] Beit-Arie illustrated the benefits to libraries in a broader sense and listed three applications of OpenURLs.[23] The first application is collection development and management. Through OpenURL linking, libraries collect valuable information and usage statistics that can help them in collection development. The second application is approval plans. According to Beit-Arie, some very interesting work is happening in this area in conjunction with OpenURL linking. The third application is resource sharing and consortial environments.

> OpenURL linking can facilitate some very interesting methods of resource sharing amongst consortia members. SFX, for example, is implemented in a number of very different consortia environments in which—to a different degree—resource sharing among members occur. With OpenURL linking, sharing can happen on-the-fly while retaining independence of member institutions.[24]

The Roles of Libraries and Librarians

The advice and insights offered by the experts on the committee regarding the roles that libraries and librarians should play concerning OpenURLs was enlightening. Most members recommended that libraries be aware of OpenURLs and insist that products that they purchase use them. Karim Boughida replied, "Be an early adopter . . . it's a library-driven project versus database or publisher vendor-driven. It's empowering librarians and end-users."[25] As indicated by Van de Velde, "Librarians need to be aware of this in their negotiations with data providers. They must insist that databases are OpenURL enabled."[26]

Beit-Arie wrote that OpenURL defines a low barrier mechanism and specification for a very important piece in interoperability of scholarly information.[27] Libraries and information providers alike can benefit from implementation of the OpenURL's open linking framework. Librarians should aim at having OpenURL compliance with every resource to which they license or subscribe. Information technologists should bear OpenURL in mind when designing and implementing new applications.

OpenURL can carry either very minimal or very extensive and complete metadata about a referenced work. For OpenURLs to be effective for the purpose of provision of context-sensitive linking, libraries should ensure that vendors provide sufficient metadata to meet the needs of context-sensitive services. According to Beit-Arie, there is now an active lobbying group among SFX customers to ensure that vendors meet the standards required by libraries. "Ex Libris has also played an active role in working with vendors to ensure that the OpenURL is effective."[28]

Some committee members had warnings about OpenURLs. According to Fegan, "It isn't perfect. It doesn't fix data discrepancies. It assumes that the metadata that is transported from one system can be properly interpreted and matched in a second system. Differing editorial polices, tagging rules, etc. . . . are still problematic. Librarians need to understand that there will be errors."[29] Norman also expressed the same warning: "Be aware that OpenURL is not another searching protocol or metadata format. It is for transporting metadata in a specific context."[30] On the other hand, libraries with OpenURL servers will help their users save time by easily connecting users with library-supplied resources that link to items identified through searches from services such as OCLC FirstSearch.

Norman also stated that library staff can set up the OpenURL server link in FirstSearch with a minimum of effort and without the need for extensive technical expertise. "Libraries can link to FirstSearch full-text, OCLC and local Z39.50 Holdings, and other

OCLC services from alternative service providers and resolvers through inbound OpenURL linking to OCLC's OpenURL Resolver."[31]

Concluding Comments

Clearly OpenURLs are the next logical step in the evolution of the Web. On the OpenURL Web site, there is a link to a song by Fatboy Slim titled "Weapon of Choice." Part of the refrain, is "check out my weapon, my weapon of choice." According to Van de Velde, "The theme song was by coincidence. The video had just come out around the time of our first meeting. I had downloaded it on my computer and showed it to the committee. I believe it was Herbert who pointed out that OpenURL was indeed a "Weapon of Choice" in two ways: it is a preferred weapon, but it is also a weapon that provides choice . . ."[32] Hopefully libraries will embrace OpenURLs and give their users their own personal weapon of choice.

Acknowledgments

I wish to thank committee chair Eric F. Van de Velde, director of Library Information Technology at the California Institute of Technology, as well as the other committee members, including Oren Beit-Arie, Ann Apps, Phil Norman, Todd Fegan, and Karim Boughida, for their responses to my inquiries.

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Committee-Recommended Resources

The committee members were asked for the top three resources they recommend to readers to learn more about the OpenURL projects. Most mentioned the NISO AX site (http://library.caltech.edu/openurl) and the site's bibliography (http://library.caltech.edu/openurl/Bibliography.htm). Apps reminded us that, "The NISO AX site provides information about the development of the standard. Other Web sites I'm aware of are commercial."

Beit-Arie added four following listings he felt were relevant:

- NISO AX OpenURL Web site, http://library.caltech.edu/openurl
- SFX Web site, www.sfxit.com/publications
- Herbert Van de Sompel and Oren Beit-Arie, "Open Linking in the Scholarly Information Environment Using the OpenURL Framework," *D-Lib Magazine* 7, no. 3, www.dlib.org/dlib/march01/vandesompel/03vandesompel.html;
- Herbert Van de Sompel and Oren Beit-Arie, "Generalizing the Open URL Framework beyond References to Scholarly Works—The Bison-Futé Model." *D-Lib Magazine* 7, no. 7/8, www.dlib.org/dlib/july01/vandesompel/07vandesompel.html.

Beit-Arie's third listing is the first article about OpenURL that describes both the OpenURL framework and its specification in some great details. It also contains a section about the DOI/CrossRef/OpenURL integration project. The fourth listing lays the groundwork for the current development of OpenURL v.1.0 by the NISO AX Committee.

Boughida recommended the following articles from RLG and OpenURL in Focus 56, June 2002 (www.rlg.org/r-focus/i56#sfx):

- "Connecting Citations and Full Text: Eureka and OpenURL," Walt Crawford, RLG
- "Implementing OpenURL Linking with SFX: The NYU Experience," Gloria Rohmann, New York University
- "OpenURL at the University of Chicago Library," Jim Mouw, University of Chicago
- "Implementing OpenURL: Advice from the Library Trenches," Kimberly Parker, Yale University

Boughida also recommended the OpenURL white paper, prepared by Harry E. Samuels, digital library projects coordinator, Endeavor Information Systems, available at www.endinfosys.com/pdf/openurl4_02/pdf.

Appendix A: Interview Questions

The following inquires were sent via e-mail to the members of the National Information Standards Organization (NISO) Committee AX

responsible for producing the OpenURL standard.

1. When and how did you become involved in the OpenURL project?
2. Please describe the scope and application of the OpenURL standard. What problems does the OpenURL standard address?
3. Initially, what applications did you envision utilizing open URLs? Has that changed as this project evolves?
4. How different is the OpenURL standard from other metadata standards, such as Dublin Core, OAI, ONIX and etc.? Would the OpenURL standard affect/enhance other existing standards and practices? How?
5. How do you see the OpenURL project impacting libraries?
6. What are the potential library projects that would benefit most using the OpenURL standard?
7. What is important for librarians and information technologists to be aware of concerning OpenURLs?
8. What are the top three resources you recommend for readers to learn more about the OpenURL projects, (for example, resources, Web sites, etc?)
9. What biographical information shall I add to this article?

Appendix B: Respondent Biographies

This appendix provides information about the positions held by the respondents and also their academic training.

Ann Apps is a researcher for Manchester Information and Associated Services (MIMAS), at the University of Manchester, England. She is also chair of the Dublin Core Citation and Type Working Groups and a member of the Dublin Core Advisory Board. She is a member of the CEN/ISSS Workshop on Metadata for Multimedia Information-Dublin Core (MMI-DC), the European standards initiative, as well as a member of the Committee of the British Computer Society Electronic Publishing Specialist Group.

Oren Beit-Arie is Ex Libris Group Vice President for Research and the managing director of the Information Services Division, a division within Ex Libris Group that develops and markets the SFX link server. He began work on the OpenURL standard (now known as OpenURL v.0.1) that was first published in April 2000, and worked extensively on promoting the OpenURL's Open Linking framework with libraries and information providers. He has degrees in mathematics, computer science, and theoretical linguistics.

Karim Boughida is a senior information systems architect at the Getty Research Institute. He has an MLIS from the University of Montreal, Canada. Before joining the Getty, he was responsible for digital library products at Endeavor Information Systems, Chicago, a leader in library and information systems. Prior to that, he was responsible for knowledge records information in database systems in various sectors (government, financial, etc.). Karim has been with the computer and information industry for more than thirteen years.

Todd Fegan is the vice president of ProQuest Product Management and has been with ProQuest for ten years.

Phil Norman earned a bachelor's of science degree in data processing technology from the Speed Scientific School of the University of Louisville. Prior to joining OCLC, he was a computer specialist for the IRS. He has been working at OCLC for over fifteen years. He was the project manager of the first release of FirstSearch in 1991 and has been associated with that product ever since. His current title is Senior Technical Manager of the User Interface Section of the Cooperative Discovery Services Division.

Eric F. Van de Velde is the director of Library Information Technology and at the California Institute of Technology. He holds a Ph.D. and a M.Sc. in mathematics and a M.E. in computer science.

Using Microsoft Share Point Team Services for Library Committee Management

Abhijit Rao

Library committees work for the improvement and technological advancement of library services. Managing these committees is not an easy task, especially when there are subcommittees within a larger committee. Inefficient management often leads to the disorganization of information and ultimately affects the objectives of the committee. This article explores the possibility of using Microsoft Share Point Team Services, a team Web site solution, for easier and more centralized management of library committees.

Library staff work in groups to improve library services and ensure the best service for their patrons. These groups, also known as committees, have goals to realize and deadlines to meet. They are involved in regular meetings, training and discussion sessions, and many other developmental activities. Due to the heterogeneous nature of this type of committee, where members are both within and outside the organization, library committee management demands organization.

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NASIGuide: OpenURL

by Morag Boyd

August 2004

What is OpenURL?

OpenURL is a syntax for Universal Resource Locators (URLs) that carry metadata instead of the address of a specific web page. The information carried by an OpenURL is often an article citation. In addition, OpenURLs can use existing standards such as DOI (Digital Object Identifier) and Z39.50 to create these links. OpenURL is a National Information Standards Organization (NISO) standard Z39.88-2000X. It was released as a draft standard for use beginning May 1, 2003 and was approved as a standard following a voting period of January 26-March 10, 2004. The approved standard is being prepared for official publication.

What does an OpenURL look like?

For example, this citation could be found in a database:

> Lagace, Nettie. (2003). "The Open URL and SFX Linking." *Serials Librarian* 44 (1/2): 77-89.

This citation can be built into an OpenURL by including the elements of the citation:

> http://openurllinkresolver.library.org/main?sid=LibraryLit&genre=article&issn=0361-526X&atitle=The%20OpenURL%20and%20SFX%20Linking&title=The%20Serials%20Librarian&volume=44&issue=1%2F2&spage=77&epage=89&date=2003&aulast=Lagace&aufirst=Nettie&id=doi:10.1300/J123v44n01_10

The first part is the base URL which is specific to an institution. The rest of the URL contains metadata about the article; this is the "open" part -- a URL in this form can be used by anyone employing OpenURL technology.

Why was OpenURL developed?

OpenURLs were developed to solve the problem of moving users from citations to the electronic full-text that was available to them. OpenURLs dynamically created links to specific content.

Who uses OpenURL? How do they use them?

Information providers can OpenURL-enable their products to facilitate linking to and from electronic resources. An information provider may enable its products to function as "sources," "targets," or both. OpenURL sources are information providers who can generate OpenURLs dynamically within their databases. Sources are often abstracting and indexing

databases. The most common use of OpenURL is to link to external full text from a citation.

OpenURL targets are information providers that can be queried by OpenURLs. Targets are often online full-text content providers. For a target to work optimally with OpenURL it should have a persistent and uniform method of querying or linking, but the target does not need to be specifically handling OpenURLs.

Libraries use OpenURL to move users effectively from citations, usually in databases, to full-text. Other tools such as the online catalog can be integrated into OpenURL services. OpenURLs are persistent so they can also be used for course reserves, bibliographies, in the catalog, etc. It is also possible to generate other user tools, such as A-Z e-journal list or known item searches.

There are many more possibilities for using OpenURL. While OpenURL has typically been used for article citations, it can also be used to link to any web-accessible item, from audio and video files, virtual reference services, interlibrary loan forms, and so on.

How do I implement OpenURL at my library?

For a library to begin using OpenURL, it must implement an OpenURL link resolver. A link resolver is software that maintains a profile of the full-text available to users as well as the "instructions" on how to link into targets. Link resolvers usually reside on a server that directs incoming and outgoing traffic; the name of this server is the base URL for that institution.

Link resolvers are available commercially from a several sources. Products include Endeavor LinkFinder Plus, Ex Libris SFX, Openly Informatics 1cate, SerialsSolutions Article Finder, and TD Net TOUR. These vendors provide "knowledgebases" of coverage and linking programs to targets that can be customized by an institution. Because OpenURL is based on a published, open-access standard, it is also possible for an institution to develop a link resolver independently.

Once a link resolver is ready to accept OpenURLs for an institution, a library must work with sources to turn on OpenURL linking in each product.

For more information:

Websites

NISO: http://www.niso.org/

Draft Standard: http://www.niso.org/standards/resources/Z39-88-all-draft.pdf

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Margaret Mering
Elna Saxton
Editors

Roaring into Our 20's: NASIG 2005

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Pre-publication
REVIEWS,
COMMENTARIES,
EVALUATIONS . . .

"This compilation of pre-conference/conference papers is a great resource for keeping serials librarians pro-active in making decisions for serial resources for their institution. It is imperative that decisions facing the serials resources are addressed by persons who are knowledgeable about current issues facing every library in efforts to provide the greatest number of quality resources and to make them usable for users in a timely manner. Information on open access, the serial industry, and workflow issues were especially helpful."

Betty Batten, MLS
Serials Librarian
Edmund Stanley Library
Friends University

Beyond Article Linking: Using OpenURL in Creative Ways

Morag Boyd
Sandy Roe
Presenters

Sarah E. George
Recorder

SUMMARY. OpenURL link resolvers are a popular library technology that connects users to services related to a particular item, such as the full-text of an article, the location of a print journal, an interlibrary loan form, and a related Web search. Librarians at Illinois State University discuss applications of openURL linking beyond connecting citations in online databases to the full-text of the article. These applications include use in the library's online catalog, bibliographies, and usage statistics. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <http://www.HaworthPress.com>]*

OpenURL link resolvers are a popular library technology that connects users to services related to a particular item, such as the full-text of an article, the location of a print journal, an interlibrary loan form, and a

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[Haworth co-indexing entry note]: "Beyond Article Linking: Using OpenURL in Creative Ways." George, Sarah E. Co-published simultaneously in *The Serials Librarian* (The Haworth Information Press, an imprint of The Haworth Press, Inc.) Vol. 50, No. 3/4, 2006, pp. 221-226; and: *Roaring into Our 20's: NASIG 2005* (ed: Margaret Mering, and Elna Saxton) The Haworth Information Press, an imprint of The Haworth Press, Inc., 2006, pp. 221-226. Single or multiple copies of this article are available for a fee from The Haworth Document Delivery Service [1-800-HAWORTH, 9:00 a.m. - 5:00 p.m. (EST). E-mail address: getinfo@haworthpress.com].

Available online at http://www.haworthpress.com/web/SER
doi:10.1300/J123v50n03_03

related Web search. In this presentation, Morag Boyd and Sandy Roe from Illinois State University (ISU) review the function of openURL systems and discuss additional applications of openURL linking beyond connecting citations in online databases to the full-text of the article.

The 2005 NISO standard (Z39.88: The OpenURL Framework for Context-Sensitive Linking) defines openURL as "a syntax that creates Web-transportable packages of metadata and/or identifiers about an information object. OpenURL metadata packages are at the core of context-sensitive or open link technology."[1] In CONSER's "Summit on Serials in the Digital Environment," Steve Shadle describes openURL in this way:

> OpenURL is an "actionable" URL that transports resource metadata. OpenURL standard is designed to support access from an information resource (source) to library service components (targets). A link resolver parses the elements of an OpenURL and provides the appropriate services that have been identified by the library.[2]

Three primary components of an openURL are the base URL, the source ID, and the citation information. A simplified example of an openURL is the following link:

> http://www.linkresolver.edu/library?sid=aidb&genre=article&issn=07309295&title=Information technology and libraries&volume=22&issue=3&date=2003&spage=129&atitle=The development of the NISO committee AX's OpenURL Standard

The URL "http://www.linkresolver.edu/library" represents the base URL for a specific library's link resolver. The "sid" identifies where the citation came from. The rest of the openURL identifies parts of the citation and includes the journal title, ISSN, volume, issue, date of publication, start page, and article title.

OpenURL linking benefits users in numerous ways. The link resolver automatically identifies appropriate copies and services for each item. Using a link resolver simplifies the process of connecting a user from a citation source to the appropriate content. Consulting multiple tools to locate materials is no longer necessary because the link resolver uses different Internet browser windows to connect the user from the source to the target service. OpenURL systems also centralize the management of content coverage for a particular item, resource, or service.

HIỂU TIÊU CHUẨN OpenURL VÀ TÀI NGUYÊN ĐIỆN TỬ: SỬ DỤNG HIỆU QUẢ NGUỒN TÀI NGUYÊN SẴN CÓ

QUIN ZHU

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TÓM TẮT

Tiêu chuẩn OpenURL cung cấp một cơ chế truyền tải siêu dữ liệu hay nhận dạng tiêu đề số từ một tài nguyên thông tin này đến một tài nguyên thông tin khác, cũng như một phương thức xây dựng các nối kết trong môi trường nối kết động. Tiêu chuẩn OpenURL cung cấp phương tiện tích hợp các tài nguyên điện tử. Bài báo này trước tiên mô tả một số vấn đề tích hợp đối với các tài nguyên điện tử trong thư viện và tiếp tục thảo luận về các dạng URL trước khi đưa ra một cái nhìn tổng thể về tiêu chuẩn OpenURL và hệ thống nối kết OpenURL, cũng như hệ thống xử lý nối kết. Ở đây cũng mô tả những sản phẩm nối kết OpenURL lớn và những lựa chọn giải pháp chủ đạo và đồng thời thảo luận về ảnh hưởng của tiêu chuẩn OpenURL và các hệ thống nối kết OpenURL đối với người sử dụng thư viện và dịch vụ thư viện. Nhiều phát triển mới trong tiêu chuẩn OpenURL và các hệ thống nối kết cũng được đề cập trong phần kết luận.

1. Tài nguyên điện tử và vấn đề tích hợp

Ngày nay nhân viên trong các thư viện và trung tâm thông tin đang cố gắng xây dựng cũng như phát triển tài nguyên điện tử của mình ngày càng nhiều để cho bạn đọc của thư viện có thể tự do truy cập. So với tài nguyên in ấn ở trong thư viện và trung tâm thông tin thì tài nguyên điện tử có thể sẽ phức tạp hơn nhiều.Ví dụ, nội dung của tài nguyên điện tử có thể sẵn có truy cập từ một nhà "tích hợp nội dung" ("Aggregators"), mà chúng ta có thể thấy các tài nguyên đó trong những Website của các nhà xuất bản, hoặc được quản lý bởi các thư viện và trung tâm thông tin. Một vấn đề thách thức đối với nhân viên trong thư viện và trung tâm thông tin là làm thế nào cung cấp một phương thức hiệu quả cho người dùng nhằm dễ dàng tìm và sử dụng các tài nguyên điện tử. Chúng ta hãy cùng xem xét một tình huống cụ thể. Một người sử dụng đang tìm kiếm thông tin về "XML" và "mô hình ngữ nghĩa". Trước tiên, anh ta sẽ tìm kiếm trên cơ sở dữ liệu thư tịch và tóm tắt (A&I Databases), điều này thường giúp anh ta có được một danh mục trích dẫn tạp chí. Một số cơ sở dữ liệu thư tịch tóm tắt thường sẵn có nối kết tới những bài báo toàn văn và nếu anh ta có quyền truy cập thì anh ta có thể truy xuất ngay lập tức

nhật và hiện hành của nhà cung cấp dịch vụ này.

7. Phát triển tương lai

Khái niệm của tiêu chuẩn OpenURL lần đầu tiên được phát triển từ nghiên cứu của Van de Sompel tại trường đại học Ghent (University of Ghent) tại Bỉ (Van De Sompel và Beit-Aire, 2001) và sau đó được thử nghiệm tại Phòng thí nghiệm Quốc gia Los Alamos ở Mỹ. Vào đầu năm 2000, công ty **Ex Libris** đã mua lại công nghệ này, gọi là máy chủ **SFX (SFX server)**. Và cũng vào cuối năm 2000 đó, Van de Sompel và Beit-Aire đã đệ trình quy trình kỹ thuật về xây dựng đường dẫn OpenURL tới Tổ chức Tiêu chuẩn Thông tin Quốc gia - NISO (National Information Standard Organization) để được phê duyệt thành tiêu chuẩn. Nó đã được đưa vào quy trình tiêu chuẩn hóa (http://library.caltech.edu/openurl/default.htm).

Ngày càng có nhiều nhà cung cấp tài nguyên thông tin làm cho hệ thống của mình tương thích OpenURL. Nó cũng bao gồm cả các nhà tích hợp nội dung, cung cấp nội dung, nhà xuất bản, hệ thống quản lý thư viện ..., và nó sẽ trở thành một tính năng chung cho hầu hết tài nguyên thông tin.

Tương lai của OpenURL rất hứa hẹn. Tôi tin rằng khái niệm này sẽ được mở rộng vượt ra khỏi thế giới thư viện, và ứng dụng sẽ được mở rộng đến tất cả ứng dụng Web. OpenURL sẽ giúp chúng ta dễ dàng hơn để tìm, di chuyển cũng như sử dụng tài nguyên trên Web.

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UCI와 OpenURL과의 상호호환성 연구

한국전산원

□ 차 례 □

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Content and Workflow Management for Library Websites

Case Studies

Holly Yu

most interesting and innovative development in library Webs is happening with PHP and is often used in conjunction with MySQL—another open source product—even though most scripting languages can connect to all sorts of databases. The PHP/MySQL combination appears quite frequently in library Web applications and should be a consideration when building WCM systems and tools in-house (Klein, 2003).

For libraries, adherence to both current and developing standards means tools will be able to handle bibliographic data in an improved manner, displaying results from queries and providing key bibliographic information. Metadata standards for libraries such as Dublin Core (DC), OAI, ONIX, MARC, Z39.50, and the newly developed OpenURL are vital standards in the Web environment. OpenURL unlike the others is "transportable metadata," providing links to resources in multiple databases and is primarily concerned with bibliographic resources (Hendricks, 2003). Proprietary databases that do not support such library standards will diminish the power of any WCM to deal with library information.

Choosing the right approach for future development and performance will depend upon the blend of these structures and tools.

WCM Systems

Typically, content on the Web is stored in pages, which are often edited manually and contribute to a static Web, one that is consistent for each viewer and does not change unless replaced or edited. WCM systems automate the various aspects of the life cycle of the content from writing to publishing. Setting up the rules and procedures for the collection, maintenance, and display of information, a traditional aspect of librarianship, is key to the successful redeployment of Web content. One thing a WCM system will not fix is poor writing. Having an automated system does not improve existing content, and good writing should always be paramount to any system of delivery.

Managing the scope and amount of content on library Web sites has determined to a large extent the range of implementations currently being used. Libraries typically are not generating huge amounts of content, and most content does not require daily updates. Most libraries are therefore not seeking large-scale implementations, but rather tailored solutions for a specific content challenge: how to manage a collection of links for example, or how to create personalized research guides on the fly.

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To Batch or Not to Batch? The Impacts of the OCLC eSerials Holdings Pilot

Janet Chisman
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Lihong Zhu

ABSTRACT. Washington State University Libraries is participating in the OCLC eSerials Holdings Pilot. This project explores the possibilities of using existing management tools to enter holdings information into WorldCat with minimal impact on workflow for the participating libraries. This automated batch loading of holdings data into WorldCat has implications for public services by extending local library catalog holdings to the World Wide Web; for Interlibrary Loan by increasing the number of requests for articles in electronic serials; and most profoundly in cataloging departments where established policies and procedures need to be reviewed and revised. doi:10.1300/J124v24n04_05 *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800- HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <http://www.HaworthPress.com> © 2007 by The Haworth Press, Inc. All rights reserved.]*

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Electronic serials have revolutionized the information landscape and challenged library policies and procedures in fundamental ways. Their dynamic nature demands the development of new management tools to track access and archival rights, suppliers, publishers, licenses, consortial agreements, and administrative modules, in addition to the traditional tasks of tracking title changes, cessations, and splits and mergers.

An entire new industry is developing around supplying libraries with updated, accurate information about their eSerial holdings, customized A-Z e-journal lists separate from the online catalog and sets of MARC records for the catalog.[1] New and emerging standards are beginning to provide the environment for development of desperately needed management tools called Electronic Resource Management (ERM) tools.[2] The work of the Electronic Resource Management Initiative (ERMI) from the Digital Library Federation (DLF) defined the contents and elements of ERM systems and provided a much needed data element dictionary for standardizing the language used in collecting and sharing information about electronic resources and their associated licenses.[3] This foundation work is being used by the DLF and the US National Information Standards Organization (NISO) to develop formal standards. EDItEUR and NISO are developing ONIX for Serials to provide standardized formats for exchanging information about serial products and subscriptions.[4] There are three areas of development: Serials Products and Subscriptions (SPS); Serials Online Holdings (SOH) and Serials Release Notification (SRN). The OpenURL standard provided the needed vehicle for linking to electronic resources, allowing "one-stop shopping" to authorized patrons.[5] The COUNTER standard has been developed for the uniform handling of statistics associated with the use of electronic resources.[6] The uniform collection and availability of standardized statistics allows librarians to calculate cost-per-use figures as they refine the analysis of their serial collections. Libraries are closely examining workflow, staffing levels, and needed expertise as they purchase electronic resources and begin to use the new management tools.

With these standard-based tools and updating services now available, librarians are looking beyond managing resources within the local catalog and subscribed databases to other services that will help them further streamline their operations while extending the availability of their resources to anyone using an Internet search engine. This paper focuses

to add holdings to purchased and free e-resources as they are cataloged. In addition, we will continue to attach holdings for e-resources not in SFX when they are cataloged. We also plan to add electronic government document serial holdings to SFX. This will then allow automatic addition of holdings in OCLC if the pilot project evolves into an OCLC service.

In the long run, we will continue to examine what role OCLC union listing should play for our library, our patrons, and information seekers all over the world. This question drives all future decisions on our local policies related to e-holdings. We have benefited greatly from our participation in the pilot project and our venture into the dynamic world of electronic resources. The journey has provided us with opportunities for examining, questioning and revising our policies, staffing, and workflows. It has benefited our patrons with easier access to our electronic resources from our catalog, subscribed databases, and now directly from the World Wide Web. We are definitely looking forward to finding new opportunities in changes that seem to occur on a daily basis.

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OpenURLs

By Billie Peterson, Baylor University

Dear Tech Talk—

I feel so behind the times. There is all this talk about the use of OpenURLs. I just can't seem to get a handle on what it is and why I – as a long-term reference librarian and instructor – should even care. I'm tired of being out of it. Please help!! —Obviously Oblivious on OpenURLs

Dear OOO— As a long-term reference librarian and instructor, you – more than anyone else – should care about OpenURL technology and what it can do to enhance the research process. Especially that part of the process the researcher cares about the most – getting the actual document, quickly and easily!!

How often have you helped someone find the perfect set of references for their research? Both you and the researcher are so excited; the next step is to actually get access to the needed articles and get them right now!! Then – how often have you spent the next 10, 15, 20 minutes checking a wide variety of resources for the full text, saying to the researcher, "I know we have this available, I just can't remember where!!" And then – you finally find it – only to discover that the needed dates aren't available online and the library doesn't have it in print. Finally, the researcher manually completes an interlibrary loan request form. Next, you gently explain to the researcher that s/he must repeat this process for each of the other references. Even the most determined researchers become daunted quickly when faced with this scenario!

With all of this modern technology, shouldn't the nuts and bolts of research be getting easier rather than harder? Wouldn't it be great if there was some kind of automated process that could take the researcher from the citation to the online full text, or the print version, or submit a request to interlibrary loan if there were no other options? But wait, there is – that's what the OpenURL protocol can do.

The OpenURL protocol uses a standard syntax for transporting (not creating) metadata – for example metadata that describes a specific journal article. The OpenURL framework was developed by Herbert Van de Sompel, then at Ghent University in Belgium, and others. Ex Libris was one of the first technology partners and in February 2000, Ex Libris purchased all rights to develop and market the SFX technology. The first draft of the OpenURL standard was posted publicly in April 2000 at http://www.sfxit.com/openurl.html. In December 2000, the OpenURL specifications were submitted to NISO for its official standardization. (Hendricks 129) The draft of the standard has been completed and has been released for ballot and review January 26, 2004-March 10, 2004. (http://www.niso.org/committees/committee_ax.html).

An OpenURL consists of two parts: the BASE-URL (the location of the link resolver – a server with software that brings an element of context sensitivity) and the descriptive URL (the metadata that describes the item and is passed to the link resolver). A sample OpenURL for this article might look like: http://linkresolver.university.edu/?genre=article&atitle=OpenURL&title=Library%20Instruction%20Round%20Table%20Newsletter&issn=02706792&date=2004-03&volume=26&issue=3&spage=10&aulast=Peterson-Lugo&aufirst=Billie

In this example, the BASE-URL is linkresolver.university.edu. Everything that is displayed after the "?" is the metadata that describes the specific article: article title, journal title, ISSN, date, volume, issue, date, start page, and author's last name and first name. The metadata provided is defined by the OpenURL-enabled resource that is creating the OpenURL. Therefore, the descriptive URL may provide more or less metadata than the above example. To create an OpenURL, go to SFXs OpenURL generator: http://demo.exlibrisgroup.com:9003/demo.

OpenURL-enabled resources are capable of providing OpenURLs to link resolvers. Within the context of OpenURLs, the electronic resources in the library's collection fall into two categories: sources and targets. Sources are the starting point for the end-user – databases such as Academic Search Premier, ArticlesFirst, GeoRef, and Web of Science – typically, the library's electronic resources the end-user uses to look for information. When a library gets ready to implement an OpenURL service, library staff must contact the vendor for each OpenURL-enabled resource to which the library subscribes – those that will be used as sources. The vendor needs the address of the link resolver and usually library staff needs some specific information from the vendor in order to complete the configuration of the link resolver. A growing list of sources maintained by SFX can be found at: http://www.sfxit.com/sources-list.html.

Targets are the resources that can deliver the full text of an article or other extended services (generate interlibrary loan requests, pass the search to the local online catalog, etc.). Obvious targets are full-text journal providers such as JSTOR, MathSciNet, ProjectMuse, and ScienceDirect. However many aggregated databases are also targets because they provide access to selected full text. Therefore, some resources, like ABI/Inform, Academic Search Premier, InfoTrac OneFile, and many others, can serve both as sources and targets. A list of targets maintained by SFX can be found at: http://www.sfxit.com/targets.html.

The link resolver is a server that sits between the sources and the targets. This server provides "intelligence" to the behind-the-scenes decision making. It uses the metadata passed in the OpenURL and compares that data to information in the knowledgebase about the library's local digital resources, using "rules" set by the local library to display the information to the end-user

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Serials Solutions – ArticleLinker (http://www.serialssolutions.com/articlelinker.asp)
University of North Carolina, Greensboro – JournalFinder (http://journalfinder.uncg.edu/demo/)

Implementing an OpenURL service can be both a daunting and rewarding task. To be effective, the implementation must be thought out and the knowledgebase carefully constructed and maintained. The good news is that an OpenURL system can be implemented in small increments. Begin by focusing on one or two major sources that currently provide no or very limited full text access. Concentrate on the development of the knowledgebase for the library's digital collections in order to make available the richest full-text access that the library has to offer. Another way to make a good impression quickly is to create the "hook" to the interlibrary loan request form. Both those requesting materials from other libraries and those who process the requests will be excited proponents of this new technology. The requestor will be thrilled that the form is automatically populated with the correct citation information, and the ILL staff will be equally thrilled that they no longer have to decipher forms with inaccurate information. Whichever route you choose for implementation, an OpenURL system is a win-win proposition for both researchers and library staff.

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As always, send questions and comments to:

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Summit on Serials in the Digital Environment

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OpenURL Panel

Alex Merrill, Washington State University
Janet Crum, Oregon Health & Science University

Western ILLiad Users Meeting
2006
WSU-Vancouver

Example: OpenURL 0.1

From EBSCOHost:

http://catalogs.ohsu.edu:4550/resserv?genre=article&issn=07309295&title=Information+Technology+%26+Libraries&volume=22&issue=3&date=20030901&spage=129&sid=EBSCO:lxh&atitle=The+Development+of+the+NISO+Committee+AX's+OpenURL+Standard.&authfull=Hendricks%2c+Arthur&pagect=5

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The Future of Cataloging: A Survey of Trends and Issues

By Cynthia Boeke

Summary: Current topics in library literature include the impact of multiple metadata formats on traditional cataloging and the need for them to be interoperable with Machine Readable Catalog (MARC) records and incorporated into library catalogs. In addition, many articles describe how new protocols, standards and technologies are allowing libraries to introduce innovative services using such metadata within their catalogs. A survey of catalogers was conducted to determine whether these or other issues were deemed the most important to the future of the profession. The respondents ranked highly the issue of the manifold metadata formats and standards, and their effect on today's MARC-based catalogs. They also expressed deep concern about the current system of attracting new librarians to the occupation, the ability of library schools to provide adequate training, and the willingness of libraries to continue providing sufficient staffing and funding for cataloging departments. Many of them highlighted the Functional Requirements for Bibliographic Records (FRBR) as an important initiative that will change the way resources are cataloged, and described future records as being enriched with additional information. Each of these four themes represents an area for more detailed scholarly investigation.

The Metadata Issue: Although it would be impossible to review all literature relating to cataloging, an informal subject review of the Library Literature database, *Cataloging & Classification Quarterly*, and topical cataloging web sites listed in Appendix A reveals a

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