



Smart Libraries™

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OpenURL breeds link resolution options

Context-sensitive link resolution, which was new and exotic technology only a few years ago, has become an almost routine component of library services, thanks in part to the near-standardization of OpenURL. In a common scenario, a user of an abstracting or indexing database finds a citation to an article of interest, clicks on a special link, and receives in return one or more links to full-text versions of the cited article that he or she is licensed to use. The user also may be offered additional links to extended services such as an abstract of the article, interlibrary loan (ILL) forms, or the library's print holdings of the journal.

Components of a link resolution system are the link source, the link resolver, and the link targets.

The **link source** is any system that can do the following steps:

- Recognize when a user has a link resolver available to him or her.
- Display a special button or link on citations (such as SFX, search LinkSource, or more information).

- When that link is clicked, send an OpenURL to the user's resolver identifying the selected resource.

About 25 online information services currently act as link sources, including Gale, The H. W. Wilson Co., Ebsco Information Systems, and the OPACs of most of the larger library systems vendors.

The **link targets** are the resources the resolver can provide links to, primarily electronic journals in publishers' or aggregators' systems. When extended services are offered, many other resources may be link targets, including interlibrary loan systems, abstracting services, citation indexes, and library catalogs.

The **link resolver** is the software in the middle. It accepts the OpenURL from the link source and determines from what target(s) the cited article is available. To do this, the link resolver must have access to a database—sometimes called a knowledge base—

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OpenURL released

Parts 1 and 2 of the OpenURL Version 1.0 are now a National Information Standards Organization (NISO) Draft Standard for Trial Use. OpenURL provides a standard framework for communicating citation information between applications. Part 1 defines the general framework for bundling metadata and transporting it over the network. Part 2 defines properties that can be used in actual implementations of the framework.—PC

Contact: www.niso.org



OpenURL *from page 1*

that records what journals a particular library's users have access to, from which sources, and within which date ranges. It also needs to specify, for each possible target system, the link-to syntax in order to build a URL to a resource in the target system. The link resolver displays to the user the menu of options available and builds the appropriate URL to access the selected target.

Link resolution systems fall into two categories: locally installed and remotely hosted.

Many link resolution systems are available to libraries. In a locally installed resolution system, the library purchases the resolver software and is usually

responsible for installing and configuring the software, and customizing and updating the knowledge base. In remote resolution systems, the library purchases a service in which a third party runs the link resolver and maintains the knowledge base. The library's role may be limited to editing the knowledge base and configuring options such as which extended services should be available.

Most vendors of link resolution systems provide the customer with a default knowledge base of several thousand journal titles and the aggregations in which the journals are included. The library has to customize this collection to reflect its own specific subscriptions and subscription dates. This customization can be expedited by loading information obtained from publication access management services (PAMS) such as those from Serials Solutions,

Inc. and TDNet. Many PAMS have partnerships with link resolution system vendors to provide data in a format that can be automatically loaded into these systems. At the same time, PAMS may take advantage of their comprehensive subscription information to offer competing link resolution services.

Library systems vendors are the main providers of locally installed resolution systems. Endeavor Information Systems Inc.; Ex Libris (USA), Inc.; Innovative Interfaces, Inc.; and Sirsi Corp. offer such systems. Other vendors have plans to offer them in the future. Remotely hosted resolution systems are available from many sources including PAMS and vendors of portal products. Some library systems vendors also will offer remote hosting services to their customers (see Table 1).

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TABLE 1. LINK RESOLUTION PRODUCTS CAN BE LOCAL OR REMOTE

Vendor	Product	Local/Remote	Contact
Ebsco	LinkSource	remote	www.linkresolver.com
Endeavor	LinkFinder Plus	local or remote	www.endinfosys.com/prods/linkfinderplus.htm
Ex Libris	SFX	local	www.sfxit.com
Fretwell-Downing	OL2	remote	www.fdusa.com
Innovative Interfaces	WebBridge	local	www.iii.com
Openly Informatics	1Cate	remote	www.openly.com
Serials Solutions	Article Linker	remote	www.serialssolutions.com
Sirsi	Sirsi Resolver	local or remote	www.sirsi.com
TDNet	in development	remote	www.tdnet.com
VTLS	in development	local	www.vtls.com

PROQUEST AGAIN OFFERS SAGE CONTENT

Sage Publications announced in April 2003 that 21 of its business titles will appear in ProQuest Information and Learning Co.'s ABI/Inform business index. Sage also is having conversations with Ebsco Information Services for a specific project. These announcements occur less than a year after Sage withdrew its journals from all the aggregators and partnered with Cambridge Scientific Abstracts (CSA) to offer four subject collections in communication studies, criminology, politics and international relations, and sociology on CSA's platform.

Although this approach is a more targeted strategy for Sage, it challenges library systems. Such changes explain the popularity of serials management systems (such as those offered by Serials Solutions, Inc. and TDNet) that automatically track the titles included in aggregated databases and supply MARC records for active titles in the library's OPAC.—*JL*

Contact: www.sagepub.com
www.proquest.com

OCLC GROUP SERVICES AVAILABLE IN AUGUST

In August 2003, OCLC will offer library consortia a Group Catalog based on holdings set in WorldCat. Sixty-eight libraries in Florida, Illinois, and the Military Education Research Library Network (MERLN) participated in a pilot project testing the Group Catalog.

Users can search a union catalog or limit their searches to any established subset of libraries within the group. For example, a Group Catalog can be profiled to default to a statewide search but allow limits by type of library or by geographic region. Users can restrict searches to a single library or expand a search globally to all of WorldCat without retyping the search.

A Group Catalog also is accessible through Z39.50, so it can be easily integrated into current consortial portals and broadcast search interfaces. Later versions of the Group Catalog will support multiple resource sharing and fulfillment options for patrons and staff.

In addition to the Group Catalog, subscription pricing options allowing unlimited use of OCLC Resource Sharing and Cataloging services are available for consortia as well as individual libraries. Libraries that want more information on group services and subscription pricing should contact their OCLC regional network.—*PLC*

Contact: www.oclc.org

Digital libraries in the classroom

Digital Libraries in the Classroom is the title of a five-year joint initiative funded for \$9.5 million by the National Science Foundation (NSF) in the United States and the Joint Information Systems Committee (JISC) in the United Kingdom. Four projects in diverse subjects will enable teams across the Atlantic to develop the underlying technology necessary for the creation and use of online resources in learning and teaching:

- Sound archives from the British Broadcasting Corp. and other sources will be used in a project at Northwestern University, Michigan State University, and Glasgow Caledonian University.
- Digital tools will be used for undergraduate anthropology at Columbia University and London School of Economics.
- Analysis of spatial information for geography students will be used at University of California, Santa Barbara; University of Pennsylvania; University of Leeds; and University of Southampton.
- Global team-based design engineering projects will be used at Stanford University and University of Strathclyde.

The creation of tools and content represent the type of resources libraries will want to index and provide access to in relation to the courses offered at their institutions.—*JL*

Contact:
www.jisc.ac.uk/index.cfm?name=programme_dlitc

OpenURL *from page 2*

Some vendors offer locally installed systems as a standalone application (for example, Ex Libris' SFX); others only offer them as part of a bundle of products (such as Innovative Interfaces' WebBridge, which is marketed as part of Millennium Access Plus (MAP), which also includes cross-collection searching and authentication modules).

A remotely hosted system may require that the library use other services offered by that vendor, for example, an A-Z list of e-journals. Generally, remotely hosted resolution systems are less expensive and require less effort on the library's part to configure, and locally installed systems may offer more options. This generalization is not always true, though, so in all cases, you should ask the following questions:

What system is best for me?

- What is the total cost of ownership for use over a five-year period, factoring in the cost of hardware if applicable, maintenance fees, any additional

licenses or services that have to be purchased or subscribed to, and annual price increases?

- Does the vendor provide a default knowledge base of e-journal titles that can be customized by the library? If so, how comprehensive is it? How often is it updated? Are updates free or must they be paid for on a subscription basis?
- How does the library customize the knowledge base to reflect its own journal holdings? What is the user interface? Can files provided by publication access management services be loaded?
- Sometimes an OpenURL does not contain enough metadata to identify the journal title, volume, and number. Can the resolver go to other sources, such as the CrossRef database, to pick up additional metadata?
- Lists of extended options can annoy a user who only wants access to full text. Can the system be configured to go directly to full text if available?
- How customizable is the display of targets to the user? When the same article is available through multiple target systems, can the system display only the preferred target? Can the library control the sort order of options and the text displayed before and after the target name?
- What usage statistics does the system provide?
- If your library is part of a larger library system or consortium, what are the options for sharing knowledge base and configuration information?

Given the popularity of context-sensitive linking with users and the range of options for link resolution available to libraries, the market for this technology

should continue to grow rapidly. One inhibiting factor, however, may be the relatively limited number of link sources, which are primarily abstracting and indexing services and library catalogs. The next step is for sources of full-text journal articles to become link sources, allowing context-sensitive links to be established for end-paper references as well as for citations.—*Priscilla L. Caplan*

Glossary

Context-sensitive linking Linking that accounts for both the link source the searcher is using and the link targets the searcher has available before offering links

OpenURL A uniform format for passing metadata among link sources, link resolvers, and other applications involved in context-sensitive linking

CrossRef A publisher-supported organization and system that maintains metadata associated with digital object identifiers (DOIs). With CrossRef, a DOI can be looked up to obtain the name of the author, article, journal, volume, and issue; and article metadata can be looked up to obtain the DOI

Extended services Linking options beyond a link to the appropriate copy of the full text, for example, links to author information, document delivery services, or print holdings.

SEARCH ENGINE WARS

On the Web, Google has given users easy access to answers that are considered good enough. Now users expect the library interface to be as simple as Google's single box for keyword searching.

Keeping track of the industry search engine giants provides some clues as to their market strategy, strengths, and

future developments that will impact library users. As more content is being made available, search engines are acquiring the ability to intelligently place ads that generate the revenue needed to support searching the growing number of websites and increased traffic.

Google, renowned for its search engine, is buying technology that will enable it

to generate higher revenues by producing results lists that are influenced by ad dollars—a profitable business model.

Google recently acquired Applied Semantics, Inc., which offers a product called AdSense that targets ads tied to full-text indexing, keyword searching,

See Search engine on page 6



Standards in the news

Bath Profile Release 2

The Bath Profile is an international specification on how to configure local systems and Z39.50 options for maximum interoperability. Earlier releases defined bibliographic search and retrieval with a focus on library catalogs, and cross-domain search and retrieval. Release 2 defines for the first time holdings request and display, and the search and retrieval of authority records.

Contact: www.nlc-bnc.ca/bath/tp-bath2-e.htm#specifications

Link checking best practices

Many libraries run link checkers on their Web pages to alert them to broken URLs—links that for one reason or another no longer point to available resources. What is a quality-control measure for librarians, however, can be a real problem for resource providers because broken URLs increase network activity and degrade performance. To help libraries be responsible citizens of the digital domain, the National Information Standards Organization (NISO) provides a two-page guide to best practices in link checking.

Contact: www.niso.org/linkcheck/NISOLinkCheck.pdf

NISO MetaSearch Initiative

The increased use of portals and interfaces offering one-search access to multiple databases have created a new set of concerns for system providers, content providers, and end-users. The new National Information Standards Organization (NISO) MetaSearch Initiative brings together librarians, software vendors, publishers, and content aggregators to explore standards and best practices supporting efficiency, access management, result sets management, statistics, branding, and other areas. This initiative should result in more efficient and user-friendly metasearch tools.

Contact: www.niso.org/committees/MetaSearch-info.html

PREMIS

Preservation Metadata: Implementation Strategies (PREMIS) is a new OCLC/RLG working group charged to continue and extend the work of the OCLC/RLG Working Group on Preservation Metadata. PREMIS will define an implementable core set of preservation metadata and address strategies for encoding, storing, managing, and exchanging preservation metadata. Institutions actively developing preservation repositories are encouraged to contact the working group.—*PLC*

Contact: www.oclc.org/research/pmwg

THE E-BOOK EVOLUTION

E-books are more than the fiction books that public library patrons download to their flashy hand-held readers. E-books are transforming themselves into databases of content the same way journals transformed into databases of articles. That hand-held technology that allows patrons to read a book from front to back has not taken off, but another kind of e-book, the reference source, has. Academic libraries and more and more public libraries are benefiting from the growing volume of e-books. This change is significant because:

- Unlike journals, indexes to the book literature do not exist in the aggregate, diminishing their use. Print books are discovered via limited bibliographic data in the online catalog or via onsite shelf browsing.
- Delivering book content to the desktop brings a new level of access to the libraries' collection of resources.
- Usage statistics for these files must be developed so libraries can document the value of these collections to their users.

Ebrary launches institutional repository pilot program

Libraries creating PDF-based documents, such as theses and dissertations, technical documents, and curricula guidelines, and those converting special collections will be interested in a new program offered by Ebrary that allows them to securely distribute content over the Internet. Best known for distributing e-book

collections, Ebrary delivers digital content in a PDF-based format that reduces download time and allows for linking within and between documents. The use of Ebrary's platform will allow academic and public libraries to integrate local content and make it searchable on the same server as commercial content.

A free pilot program is available through June 30, 2003, to Ebrary customers, who will receive:

- 500 megabytes of free storage (about 30,000 pages)
- A co-branded portal freely accessible via the library's website
- A collection of documents from different institutions that offer free access to their repository content

Ebrary's technology delivers unlimited, simultaneous multiuser access; advanced search capabilities within and across document collections; and Ebrary's InfoTools that allow researchers to highlight words and link to definitions, biographical data, maps, and translations advanced search capabilities within and across document collections.

OCLC forecasts environmental change

In February 2003, OCLC's Library and Information Center presented a report to the OCLC Members Council looking at five-year information format trends. Although the facts gathered were not surprising, taken collectively, they paint a picture of the changing environment facing libraries.

Search engine *from page 5*

and the domain name. In the academic sector, Google has been expanding its indexing of the deep Web by working with publishers such as the Association for Computing Machinery (ACM).

Growth in Google queries per day

3 million in 1999	20 million in 2000
100 million in 2001	150 million in 2002

Overture Services, Inc., which has specialized in Web based search result placements, is buying technology from more traditional search engines to broaden its market offerings. Overture has relied on its contract with Applied Semantics, and that contract is in jeopardy given the recent sale of Applied Semantics to Overture's archrival, Google.

In April 2003, Overture bought AltaVista and Fast Search & Transfer (Fast) ASA. Acquiring these well-known search engines expanded Overture's abilities beyond its primary focus of paid inclusions (where companies pay to appear high in the results list) to algorithmic ones (where the search engine returns results without the influence of paid ads).

What emerges is the shift in balance from reliance on commercially available materials to an explosion of locally digitized and Web-based resources. Print books sales are down, print-on-demand is growing, and e-book reference and nonfiction collections are growing dramatically.

Scholarly publishing is in crisis and electronic journals are preferred to print. Alternatives to the traditional publishing model are proliferating, and the amount of course content is exploding. Newspapers are in decline and so are music album sales.

Digitization projects will result in trusted sources and original content being made available online thanks to efforts in the commercial sector (Gale, ProQuest Information and Learning Co., Octavo), at the national level (national libraries in France and the United Kingdom), and through state and local projects on local history in Washington and Colorado.

Although growth in the number of websites is slowing, the surface Web, indexed by search engines such as Google, and the deep Web, which is not accessible to search engines, continue rapid expansion.

Print is not going away in the next decade. But the conversion of massive amounts of established content and book content into electronic formats is growing. And that growth means library systems must accommodate a broad range of resources that differ dramatically from the print medium the systems were originally designed to handle. OCLC's research team notes that it was not able to construct a comparison chart

reflecting positive or negative growth percentage between certain years.—*Judy Luther*

Contact:

www.oclc.org/content/53/pdf/5yearinformationformattrends.pdf

E-book collections expand

Publishers and aggregators are offering growing collections of book databases—new series and older titles.

SpringerLink offers 1,600 books in 22 subject areas including chemistry, computer science, engineering, geoscience, life sciences, mathematics, and physics. Some titles date back to 1961. The tables of contents and abstracts are freely accessible to everybody.

Books24x7's ITPro library exceeds 2,500 titles from more than 80 publishers including McGraw-Hill, MIT Press, Sybex, and John Wiley & Sons. Subscribers can perform searches of the entire collection or single books. Books24x7's BusinessPro library has more than 1,000 titles on leadership, communication, time management, and finance. Its OfficeEssentials collection of 80 titles targets nontechnical users.—*JL*

Contact: www.ebrary.com

www.link.springer.de

www.books24x7.com/home.asp?

Fast is the search engine that powers Scirus, EIVillage2, and now Endeavor, all owned by Reed Elsevier. Fast uses www.alltheweb.com to showcase its technology. In addition to Boolean searching, Fast has sophisticated relevancy ranking needed for full-text searching. Fast also offers adaptive spell checking, thesaurus support, automatic classification/indexing, distributed search, and a robust search alert system. Fast's primary business has been delivering real-time search and filter technology to companies such as AT&T, Freeserve, IBM, and Reuters.

Yahoo!, Inc., which has been using Google's search technology, just acquired Inktomi Corp., which offers the capability of paid

inclusions for commercial search results. This alliance may make Yahoo! less reliant on Google.

Google is still privately held but it may go public in the next few years. Microsoft sees Google as a competitor because it connects users with content. Where do you want to go today?—*JL*

Contact: www.alltheweb.com

www.inktomi.com

www.google.com

www.appliedsemantics.com



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