



Library Systems TM

An innovative overview of library automation

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New models emerge for digital library tools

Integrated library systems (ILS) and their vendors have handled the automation of most library functions for many years, but the rise of digital library services has spawned new, non-traditional creators of software and systems. Many libraries require new functionality in the broad areas of digital library services, including portals and linking services, the local creation and delivery of digital content, and electronic resource management.

Although some ILS vendors have begun building some of this functionality into their systems, development has been uneven. These modules tend to be less widely available and less mature than other ILS modules. When these modules do exist, they tend to be add-on products, priced and purchased separately from the base system. As a result, librarians

looking for software in these areas shouldn't assume that an ILS vendor's solution will be optimal. If you are seeking digital library software, investigate additional options, including in-house development, commercial third-party applications, and open source software.

One set of software applications to support local digital collections is offered through the Digital Library eXtension Service (DLXS), a product of the University of Michigan Digital Library Production Service.

The DLXS software suite has two layers. The first is a full-text search engine called XPAT, which is based on software licensed by the University of Michigan from the OpenText Corp. for further development and

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Special Report: Interlibrary Loan

Self-service ILL boosts borrowing

Although library budgets limit the amount of professional and scholarly material acquired, interlibrary loan (ILL) transactions are growing on average 6% to 12% per year. According to Mary Jackson, Senior Program Officer for Access Services at the Association of Research Libraries (ARL), the cost of ILL borrowing

transactions can be reduced from the current average of \$18 per transaction to possibly as low as \$3 as estimated by some librarians whose institutions are using direct consortial borrowing (also known as remote circulation). In contrast to ILL, which is a loan between libraries, remote circulation allows patrons of different libraries to access the lending library's collection directly through their

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Public Chooses Source ILS

Library Open

The open source library management model received important validation this month when the Nelsonville, Ohio, Public Library (NPL) announced it will migrate its existing library server to the open source Koha library system. NPL has committed to help support the development of Koha by funding some work on specific projects. NPL provides services to approximately 36,000 active borrowers through seven branches with a collection of more than 250,000 items.

The Koha project began in 1999 in New Zealand and went live in 2000. For more

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redistribution. The second is a suite of programs called “DLXS middleware.” The suite consists of software libraries providing core functionality (session management, saving and managing results, and query construction) and applications called classes for managing the search and display of particular types of content such as full text, images and citations.

Each of these classes draws on the core libraries but adds specific functionality needed by the type of materials for which it was designed:

- **Text Class** provides full-text search, navigation, and filtering for collections of texts with SGML or XML encoding, as defined by the TEI in Libraries guidelines (www.indiana.edu/~letrs/tei/). Text Class provides good support for richly hierarchical markup, allows great flexibility in indexing, and scales to collections with millions of pages.
- **Image Class** supports searching of image metadata in many formats, and the display and manipulation of retrieved images. It has native support for MrSID (Multi-resolution Seamless Image Database) images, a popular format for large raster graphics such as maps, so users can view these directly without a browser plug-in.
- **Bibliographic Class** provides simple search and retrieval functionality for bibliographic and citation records. It is flexible enough to support a broad range of formats, including Dublin Core, the Federal Geographic Data Committee’s Content Standard for Digital Geospatial Metadata, and even some nonbibliographic reference works.
- **Finding Aids Class** is the newest application in the DLXS suite. Although it is the least well-developed, it has been used successfully for large collections of finding aids encoded according to the Encoded Archival Description (EAD), including those in the Online Archive of California and the Bentley Historical Library.

The DLXS software suite includes a single sign-on authentication based on the Kerberos network authentication protocol and authorization system. It uses Secure Socket Layer (SSL) to encrypt authentication but passes digital library collection data to the user without encryption, creating a balance between security and performance. A more lightweight authentication mechanism is under development for libraries without the infrastructure to support this service. DLXS also includes a broker module for exposing metadata

for harvesting by the Open Archives Initiative (OAI) Protocol for Metadata Harvesting.

Each class supports the presentation of multiple digital collections. Each allows the user to select collections to search or to search all collections simultaneously. The DLXS software suite does not provide a front end for interactive online creation and editing of metadata. Pre-existing metadata must be created in, or converted to, SGML or XML for loading into the XPAT search module. The software also does not support incremental indexing; when new metadata is added to a collection in any class, the entire collection must be reindexed, which can take anywhere from minutes for an image collection to hours for a large full text collection. In addition, the software has no Z39.50 client or server capability.

With the release of Version 9.0, the DLXS software appears to be moving to a more mature, formally supported stage. Installation, configuration, and administration tools have been significantly improved in recent releases, and the first full set of DLXS documentation has been completed. Twenty-eight institutions have licensed the DLXS suite, including the California Digital Library, the University of Pittsburgh, and the University of Pennsylvania. Beginning later this year, Michigan will be initiating informal user group meetings and moving to a process in which development requests are solicited from the user group and balloted. User group meetings will be held in spring and fall, and new releases of the software will be scheduled for summer and winter. In addition, two training workshops will be held at the University of Michigan each year.

There is little marketing of DLXS. Its use has mostly expanded through word of mouth. Some of the same functionality is offered through ILS vendor products that support search and display of full text, image collections, and EADs. Specific DLXS classes also compete with third-party products for managing SGML or images. The Image Class, for example, can be compared with Luna’s InSight, CONTENTdm, and E-Media Library.

The DLXS middleware is written mostly in PERL. XPAT and the middleware are supported on Solaris and Linux platforms. The DLXS middleware is available as free open source software that can be modified and enhanced to suit local needs. Costs to subscriber organizations consist of a one-time charge for the XPAT license and an ongoing fee for support. The XPAT license fee is \$15,000 for use on a single server and allows one addi-

LIBRARY STATS STANDARD REVISED

The 2002 revision of the ANSI/NISO library statistics standard (Z39.7) has been released as a draft standard for trial use. Called “Information Services and Use: Metrics & Statistics for Libraries and Information Providers—Data Dictionary,” it is available on the Web for use and comment at www.niso.org/emetrics.

The standard defines a common vocabulary to measure the use of electronic resources and other library metrics commonly applied in the United States and internationally. It helps the information community identify, define, collect, and interpret statistical data used to describe the current status and condition of libraries in the United States. Within the categories that report units—human resources, collections, infrastructure, finances, and services—the standard identifies and defines terms used in national or association statistical surveys. Links to the relevant instruments are included at the standards Web site.

In a major departure from the earlier standard, the 2002 revision is issued as a Web-accessible database. As a document, it can be read sequentially and is hyperlinked for easier browsing. As a database, it can be searched by any word appearing in a defined term or its definition. The intent is for the database to be continuously changed. Although this ongoing maintenance raises some still-unresolved questions about the standard’s balloting and approval process, this standard appears to be a model that NISO will follow for other data dictionary standards. Users also can participate in an ongoing discussion of the standard by subscribing to a discussion list at www.niso.org/press/listserv.html.

The release of the revised Z39.7 is a timely contribution to a set of efforts focused on improving library metrics and performance measures related to electronic resources. Related initiatives include the COUNTER (Counting Online Usage of NeTworked Electronic Resources) project, which aims to develop a Code of Practice for more consistent measurement of the usage of online information products and services at www.projectcounter.org, and the ARL Measures for Electronic Resources (e-Metrics) project at www.arl.org/stats/newmeas/emetrics.—PC

Common Digital Library Services

Portals and linking services are end-user interfaces that offer:

- Simultaneous searching of multiple targets
- Integrated searching of full text, indexes, catalogs and other resources
- Personal customization
- Local link resolution and extended linking services

Electronic resource management includes:

- Tracking which journal titles are licensed from which content providers
- Supporting license negotiation, renewal and compliance
- Collecting and normalizing use statistics and trouble reports
- Controlling access
- Providing the public with information about available resources and restrictions on their use

Delivery of digital content includes:

- The ability to create, search, and display heterogeneous metadata (including non-MARC schemes) as well as SGML- or XML-encoded full text
- The retrieval, presentation and manipulation of nontextual content such as still images, audio, and video
- Electronic publishing
- Repository and archiving services.

tional copy on a backup or development server. Additional copies of XPAT are available at a reduced rate. Support, including updates to the middleware and telephone or e-mail technical support, begins at \$5,000 per year for a single-copy subscriber. Only nonprofit or not-for-profit institutions, including academic and public libraries, are eligible to subscribe. A special library in a for-profit institution would not be eligible and there are no plans to change that exclusion. More information about DLXS is available at www.dlxs.org or by e-mailing dlxs-info@umich.edu.—Priscilla Caplan

METADATA STANDARD FOR STILL IMAGES IN TRIAL RELEASE

Technical Metadata for Digital Still Images (Z39.87-2002), a joint standard of the National Information Standards Organization (NISO) and AIIM International, the Association for Information and Image Management, has been released as a draft standard for trial use for the review period June 1, 2002, through Dec. 31, 2003.

The standard is presented as a data dictionary that identifies and defines the semantics of technical metadata elements. An XML representation of the elements, developed by the Library of Congress, also has been released as a draft for trial use and review. Called MIX, or Metadata for Images in XML, the schema can be used on its own or as an extension schema

for representing technical metadata for still images within the Metadata Encoding and Transmission Standard (METS).

Technical metadata is a type of administrative metadata that describes the creation and physical characteristics of digital objects. This standard, developed by an international committee of experts in digital imaging and image preservation, has two goals:

- To identify data elements for use in applications to control transformations of images against stated metrics for meaningful quality attributes such as detail, tone, color, and size.
- To propose elements for use by digital repository managers, curators, or imaging specialists to assess the current value (aesthetic or functional) of a given image or collection of images.

The first goal is especially important in the context of long-term preservation, because image data in time will have to be migrated from obsolete formats to newer file formats. Maintaining image quality through these transformations will be crucial.

The standard, though it relies heavily on the work of the DIG35 Digital Imaging Group, goes beyond the work of this group in addressing images scanned from other sources in addition to those created with digital cameras. It also differs by focusing heavily on qualities meaningful for preservation.—PC

Obtain the Technical Metadata for Digital Still Images draft standard at the NISO Web site: www.niso.org/standards/dsftu.html.

Access the MIX schema and related documentation from the Library of Congress Network Development and MARC Standards Web site: www.loc.gov/standards/mix.



ST LogiTrack launches 24-hour library

ST LogiTrack has announced the implementation of its Electronic Library Management System (ELiMSTM) for Institute of Systems Science (ISS) library, a National University of Singapore (NUS) department. With the new system, ISS will allow library users to visit the library—as well as borrow and return library items—after office hours, without the help of a librarian. To allow users unfettered access, a surveillance

system was integrated into ELiMSTM. The ELiMSTM Multi Purpose Kiosk enables users to circulate library items without the intervention of a librarian. The surveillance system identifies when a user accesses the library, and monitors and records activities in the library. The ELiMSTM EAS Gate will beep and alert the security guard when a patron tries to leave with an unauthorized item, and the librarian is able to track each item.—ALA TechSource

Contact: [ST LogiTrack](#)



David Seaman

joins the DLF

In July 2002, David Seaman became the director of the Digital Library Federation (DLF), a group of 30 participating member research libraries that collaborate on initiatives that support access to

digital resources. Prior to accepting this position, Seaman created and headed the Electronic Text Center at the University of Virginia, publicly recognized as a thriving source of e-books freely available on the Web.

Seaman is the first director to have hands-on experience with a public, popular site. Seaman succeeds Dan Greenstein, who left the DLF to head the California Digital Library. Seaman's appointment is noteworthy as a sign of the times, given the evolution of full-

text databases made available by academic institutions.

The DLF membership has been focused on coordinating fundamental standards for metadata. Seaman sees the membership's role expanding from defining the mechanics of digital libraries to discussing strategies for their design and use, working more with publishers internationally. —*JL*

Contact: [Digital Library Federation](#)

ARL stats raise serials question

The 2000–2001 Association of Research Libraries (ARL) statistics (just released online with the print edition available this month) offers a surprise—a reversal, for the first time since 1986, of the unit cost of a journal. That cost had risen last year to more than \$300, but is now averaging less than \$280 per unit. According to ARL staff, this drop could be the result of counting the electronic version of a print subscription to a title when it is available at a small increase over the print price, or the selection of electronic-only sources when the price is less than the base price of print.

It's also possible that libraries may be counting the increased number of journals to which they have access through consortial negotiations that include a publisher's entire journal list. In this model, introduced by Academic Press, publishers negotiate for an increased subscription fee in exchange for providing access to all of their journals in a database. This approach effectively lowers the average cost per title.

The remaining statistics confirm established trends documenting the fact that despite budget increases, ARL members are acquiring fewer books and journals and borrowing more through interlibrary loan each year. Reference transactions and book circulations have also declined.

Rather than defining new categories for electronic publications that are difficult to measure, as they are often provided in a package with the print, ARL has expanded the definitions of existing categories. ARL is focusing its energies on its New Measures Initiative which includes a variety of programs designed to assess library quality (LibQUAL), assess the impact of the library on teaching, learning, and research, or develop an instrument to measure information literacy skills. ARL's E-Metrics project provides further insights into how to define and measure use of electronic resources. —*JL*

Contact: [Association of Research Libraries](#)

LibraryDecision MAPS CENSUS DATA

Imagine a visual presentation of demographic information about library users that incorporates census data and the powerful displays associated with geographic information systems (GIS). Civic Technologies has developed a new planning tool, LibraryDecision, with these features for the County of Los Angeles Public Library (LAPL). The LAPL will launch LibraryDecision as a service in October 2002.

LibraryDecision correlates and presents information about the communities served by the library, so it's possible to base decisions on an analysis of data instead of relying on assumptions. Local library data is combined with community information drawn from the 2000 census, the National Center for Educational Statistics (NCES), and 20-year population projections—all presented visually on digital maps. LibraryDecision uses geographic information systems (GIS) from the industry leader, Environmental Systems Research Institute (ESRI), a business partner of Civic Technologies.

Supported by IBM's e-Business Hosting Service, Library Decision enables a library to correlate data for its user population with library offerings, and to present a graphical picture of library services and the user community. Public libraries can visually analyze their services, using demographic, geographic, and socio-economic data to demonstrate the need for funding, allocate resources, justify budgets, manage operations based on patron demographics, and plan facilities, such as determining the site for a new branch.

Gwinnett and Forsyth counties in the suburbs of Atlanta will subscribe to the Web-based service, and others, such as Glendale Public Library in California, contract with Civic Technologies to provide an analysis of their community demographics.

Quantitative data input by the library includes data on facilities, computers, holdings, usage, and operations. Insights can be gained to answer questions such as "How many computer terminals per branch are there and how does this number compare per capita among the branches?" Academic libraries can use this service as a tool for market analysis.—*JL*

Special Report *from page 1*

library's online public access catalog (OPAC) and circulation system.

The 35 member libraries in the Pennsylvania Academic Library Consortium, Inc. (PALCI), are using epixtech's Universal Resource Sharing Application (URSA), which allows the 340,000 students, faculty, and staff statewide to identify an item in a participating member's online catalog and place a hold on it in their circulation system so that the book is pulled and shipped by the circulation staff rather than the ILL staff. URSA functions as an extended circulation tool across libraries using different automation system vendors.

After two years, PALCI's statewide borrowing program appears to result in fewer traditional ILLs and an overall increase in books borrowed. Linda Bills, the TriCollege Consortium's Special Projects Manager, noted that in the last year more than half of the books borrowed were requested by undergraduate students, dispelling the assumption that ILL mostly serves faculty research needs. Copies of journal articles are not exchanged via URSA due to copyright concerns, so the TriCollege ILL statistics have shifted to a 60/40 ratio of books to journals borrowed rather than the typical 50/50 split.

Several ILS vendors have been working behind the scenes with the National Information Standards Organization (NISO) to develop the NISO Circulation Interchange Protocol (NCIP), which was approved in July 2002. NCIP allows data interchange so that a patron in one library can directly borrow a book from another library that checks out the book in its circulation system and sends it to the patron's library, where the book is received and put on hold at the circulation desk for retrieval.

Patrons who are accustomed to an increasingly self-service environment like the ease and speed of the service. Borrowing books remotely can reduce the time to deliver a request from two weeks to two days. However, because users base their selections on minimal bibliographic data from the MARC record in the online catalog, they sometimes receive books that do not contain what they expected. The online public access catalog (OPAC) needs to accommodate additional metadata to provide users with

sufficient background so patrons can make an informed borrowing decision.

Contact: National Information Standards
www.niso.org/committees/committee_at.html
 Pennsylvania Academic Libraries Connection
 Initiative
www.lehigh.edu/~inpalci/ursa/ursamain.html

Maybe MARC is not enough?

Developments related to remote circulation put pressure on libraries to provide more data than a brief bibliographic record so users can make an informed decision in selecting books to request. As libraries share their collections to meet the needs of their users, the patrons' virtual experience precludes their browsing the book as part of their discovery and selection process.

Patrons want to have confidence that the item they requested will provide information they need. From the libraries' perspective, as the number of items borrowed increases, it's important to have an efficient system that meets user expectations.

Currently, there are few sources for enhanced book data for the OPAC, but this situation will change with the adoption of the new Online Information eXchange (ONIX) standard within the publishing industry. Influenced by increased book sales at Amazon, publishers and online booksellers gathered in 1999 to develop ONIX, the standard for communicating book industry product information in XML (eXtensible Markup Language).

Focused on communicating promotional data, ONIX provides for the title, author, format, price, table of contents, first chapter and jacket blurb in a single record. Though focused on book sales, ONIX has been mapped to MARC by the Library of Congress, OCLC, and the British Library.

In addition to these data elements, users might also want to view book summaries, reviews, author biographies. All of this data needs to be integrated into the online catalog. Since 1991 Blackwell's Book Services has provided a Table of Contents (TOC) Enrichment Service used by academic

libraries to enhance access to books in its online catalog. It adds about 40,000 titles per year and has more than 400,000 available. Adding content to the library's MARC records is an overnight process.

Last year, Informata, owned by Baker & Taylor, introduced the Content Café, which hosts 330,000 tables of contents and 872,000 jacket images in a database to which the library seamlessly links from the MARC records in its OPAC. This service is available to customers of Innovative, epixtech, Library Solution, CARL, Gaylord, and others.

In the same time period, Allan Graham, who created the TOC service at Blackwell's, has launched Syndetics Solutions to provide content data on books in a consistent format throughout the industry. Functioning as a vendor of book metadata among publishers, booksellers, book vendors, and libraries, Syndetics has 3.5 million data elements

To see how Syndetics metadata looks in an online catalog, or to try the interface, go to the Westerville Public Library at <http://catalog.wpl.lib.oh.us> and search for Stephen King's *The Bag of Bones* and click on "Addi-

for 1.2 million ISBNs with more robust records for newer titles. In the near term, Graham foresees adding book indexes and bibliographies and working long term to create a searchable and user-friendly database of book content. —
Judy Luther

Contact: Book Industry Study Group
www.bisg.org/onix_downloads_lists.htm
 Blackwell's Book Services
www.blackwell.com/index.asp
 Informata
www.informata.com/daily_zoom.cfm?id=389
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