RFID in Libraries: Are We Ready?

by Cynthia Hodgson, ISQ Editor

Radio Frequency Identification (RFID) is a technology that has existed since the 1970’s but has only recently begun to see widespread use. Decreases in system costs, greater interest in cost-saving automation, and better standards have all encouraged the use of RFID in applications as diverse as tracking ranch animals and pets to remotely activating equipment. Most commonly, however, RFID is used to track goods in the supply chain and for security, such as controlling building access. These latter applications are what make RFID a technology of growing interest to libraries. Circulating library materials and securing materials from theft have been targets of library automation for decades. RFID offers a number of improvements over traditional barcode scanning systems and electromagnetic theft detection, but it is not without potential issues, particularly in the area of patron privacy. This article will explain RFID, review its advantages, disadvantages, and applicability to libraries, discuss the privacy concerns, and summarize the current state of standards for RFID use in libraries.

RFID Technology

RFID utilizes a combination of radio frequency technology and microchip technology to interface with a software application. An RFID “tag” is attached to the items being tracked. This paper-thin “smart” tag contains a silicon chip where data is stored and a tiny antenna that transmits and receives information. A “reader” control unit, also containing an antenna, emits continuous radio waves. When an RFID tag passes within the reader’s wave field, the tag’s information is wirelessly transmitted to the reader, which converts the analog data into digital information. The reader transmits the digital data to a computer which contains or is connected to the software application which acts on the data.

Tags can be passive, i.e. they just reflect waves back to the reader and are without a power source. Passive tags draw their power from the reader’s electromagnetic waves and therefore have more limited range. Active tags use batteries to run the chip’s circuitry and can have built-in computation capability on the tag and boost signal read ranges. Active tags are, obviously, much more expensive. Current library applications are using passive tags.

Tags can also be read only (RO), write-once/read many (WORM), or read/write (RW). RO tags must be preprogrammed with their identification data. WORM tags can have some preprogrammed data and add other “permanent” data later, if space is available. RW tags allow the addition of information and erasing of selected information (some data can be locked in an unerasable area).
Libraries that are only going to encode a unique “barcode”
type number could use a preprogrammed RO tag. Libraries
intending to add other data or use changeable data, e.g., an
on/off security bit, will need WORM or RW, respectively.
Readers can be hand-held or mounted. Readers may
contain only the software needed to communicate with the
tag and the computer, as is often the case with mounted
readers hard-wired to a computer. Portable hand-held
readers may contain additional software or data storage
capacity to facilitate their stand-alone use until they can be
connected to a computer or docking station. There are
various frequency levels that an RFID system can use to
communicate between the tag and the reader. Library
systems currently use the High Frequency, 13.56 MHz
range.
The critical application software resides on the computer
or server. The application software typically includes or
interfaces with one or more database systems, where more
detailed data about the items are stored. In a library
application the RFID application software would interface
with the integrated library system database.

**RFID Advantages and Drawbacks**

RFID offers significant advantages over less intelligent
identification systems, such as barcodes.

- No line of sight is required to read the tag. As long
  as the tag is in range of the reader, it can be read
  regardless of item orientation or alignment.
- Since no special handling of the item is needed,
  RFID tags can be read much faster than a barcode.
- Multiple tags can be read virtually simultaneously
  without individual item handling.
- Identification and security capabilities can be
  combined in a single tag. In libraries, this tag could
  replace both the barcode and the antitheft device.
  Likewise, the identification and security tasks can
  be performed with a single read of the combined tag.
- The high frequency systems in use in libraries are
  highly reliable. Boss¹ reports that libraries claim a
  50-75% reduction in false alarms over their previous
  security systems.
- Tags typically have a much longer life than a
  barcode because no scanning contact is required.
- As discussed above, the tags can be writeable,
  allowing information to be added or changed
during an object’s lifecycle.
- The tags can be imprinted with eye-readable
  information and graphics, such as a library’s name
  and logo. Alternatively a separate label, e.g., a
  bookplate, can be placed on top of the tag, since line-
of-sight obstruction is not an issue.
- Depending on the application, the reading of tags
can be done automatically and unobtrusively, or by
  the customer, since no special training is required.

RFID has some drawbacks as well, although many of these
can be addressed with future technology and standards
improvements.

- Although based on standards, the RFID system as a
  whole uses vendor proprietary technology that
  makes interoperability between systems difficult, if
  not impossible. As a result, organizations are
  committed to using only the products of their
  selected vendor unless a wholesale conversion is
  done.
- The cost of RFID tags is much higher than barcodes.
  Tags for books may range from 40 to 85 cents per tag
  compared to less than 5 cents for a barcode. Tags for
  media, such as CDs or DVDs, are around $1, as they
  require special features to overcome read problems
  caused by the metallic layer on the media.
  Customized tags, of course, cost even more.
- The tags can be vulnerable to tampering. Current
  library antitheft tags are often concealed in the spine
  of books; RFID tags are usually placed more visibly,
  although they can be covered by a label or a
  bookplate. Wrapping an item in foil or placing it in
  some metallic container will prevent its RFID tag
  from being read. (One could argue that a determined
  vandal will find a way to circumvent any security
  system.)
- There can be both signal collision (one reader
  interferes with another where their coverage
  overlaps) and tag collision (a reader receives too
  many tags’ signals simultaneously and gets
  confused). Careful reader placement as well as anti-
  collision software algorithms can reduce, if not
  eliminate these problems.
- The antennas have distance limitations. Most
  library RFID systems have a range of 12 to 18 inches.
  This could be an issue at an exit sensor, especially
  where the opening must accommodate wheelchair
  access, although readers on both sides of the
  opening will usually overcome the problem. (One
  could argue that distance limits could be an
  advantage, e.g., in reducing signal collision or for
  privacy issues—see discussion below.)
- Chip technology advances quickly and tags could
  become obsolete.
- Like all wireless technology, unsecured signals are
  vulnerable to third party interception.
Library Applications

Molnar and Wagner\(^2\) reported that in June 2004, over 130 North American libraries had installed RFID systems. Dozens of other U.S. libraries are in some stage of implementation and many more are issuing RFPs or investigating the technology. Typically, circulation control and theft detection are the two areas of implementation. Reported benefits and uses of RFID in libraries include:

- Check-in and check-out of library materials is faster.
- Staff repetitive stress injuries are reduced. The San Francisco Public Library\(^3\) conducted a study which found that their circulation staff members perform 768 repetitive motion tasks per hour while checking out items and 575 per hour while checking items in. Anecdotal vendor reports indicate that as much as 75% of such repetitive tasks can be eliminated with RFID.
- Self-service circulation is easier to implement. No special knowledge or skills are needed to check in or out materials. Patron ID cards can also have RFID tags to simplify check-out.
- Security is integrated into circulation. Security can be implemented through the use of a “theft” bit on the tag, indicating whether an item has been properly checked out, or an interface with the ILS which queries the database when the RFID tag is read to determine an item’s security status.
- New items can be tagged immediately upon receipt and located or tracked through the entire processing workflow.
- Inventories can be done substantially faster and more accurately. Materials don’t have to be taken off the shelf to be inventoried and inventory data can be downloaded directly to the library system. Fragile materials don’t need to be handled, preserving their life. Lost or hidden items can also be located. Smart\(^4\) reports that the California Statue University, Long Beach, can inventory 5000 books per hour and located 300 lost items in their first partial inventory.
- An item’s storage location can be recorded on the tag and then read by an automated sorting machine, e.g. to sort books by shelving areas, buildings, or library branches.
- Usage statistics can be recorded for each item more accurately. Currently most libraries can only track circulation usage and not in-house usage. A portable RFID reader can easily capture use data at the time of reshelving.

Privacy Concerns

The most controversial issue associated with the use of RFID technology is the potential for invasion of privacy. Privacy advocates are concerned that the use of RFID enables an organization to track an item through every point of transfer in its lifecycle, secretly track an individual through an item in her possession, “profile” individuals based on their purchase or use of items, or record usage/purchases in a database attached to personal identifying information. Additionally, any wireless, radio-wave technology, is potentially susceptible to third party interception and “eavesdropping.” Privacy groups had mainly focused their RFID opposition on retail applications, however, the San Francisco Public Library public hearings on their RFID implementation plans brought the debate into the library arena.

The inclusion of patron information on a library item RFID tag could allow the matching of a specific individual to her reading/viewing/listening material. Molnar and Wagner\(^2\) explain several other ways in which a library patron’s privacy could be invaded when RFID technology is in place:

- A book tag could be used to identify the geographic location of the library where the item was checked out to enable racial profiling based on residential area.
- Library items checked out by a particular “person of interest” could be identified. Then those items could be tracked (even in other libraries) to other individuals who also check them out, in an effort to link the individuals in some way.
- A “hotlist” of items of interest could be created, so that anyone who checks out the items can be identified.
- A third party could write their own data to unprotected unused memory space on a read/write tag to create their own tracking data or mechanism for that item.

Current library implementations of RFID rarely encode anything more than the item ID, which is meaningless without access to the linking information in the library system. Many proponents of RFID in libraries argue that most privacy issues can be addressed through the development and enforcement of guidelines, such as never placing any patron specific information on an RFID library item tag\(^5\). They also argue that the technology itself, such as the use of passive, powerless tags, and short read ranges limit the risks. Molnar and Wagner\(^2\), however, identified specific issues with current library implementations that can make them vulnerable to privacy invasions:
The lack of read password protection or encryption on the tag allows anyone with a compatible radio reader to intercept and record RFID transmissions.

Standards and protocols for collision avoidance add pre-programmed unique identification information to each tag which could be used even if the other “library-specific” data on the tag was encrypted.

If read/write changeable data, e.g., the security bit, is left unprotected and has no write password controls, a knowledgeable third party could both change this bit, e.g., from checked-in to checked-out, and even “lock” the bit so it couldn’t be changed back (what Molnar and Wagner call a “security bit denial of service”).

Most password protected systems use a single read and single write password for the entire system. Thus if one tag is compromised, the whole system is vulnerable. Passwords are also frequently transmitted by the system unencrypted and can be easily obtained by eavesdropping.

Consumers Against Supermarket Privacy Invasion and Numbering (CASPIAN) and seven other privacy groups, including the Electronic Frontier Foundation and the American Civil Liberties Union, have jointly issued a position statement calling for a “voluntary moratorium on the item-level RFID tagging of consumer items until a formal technology assessment process involving all stakeholders, including consumers, can take place.”

They have also proposed legislation that would require labeling to alert a consumer that an item was RFID tagged and to restrict the inclusion or linking of personal information with the tagged item. Any such legislation could impact library implementations. The American Library Association has established an email discussion list for those interested in keeping abreast of developments related to RFID and privacy. (To subscribe send an email to <listproc@listproc.sjsu.edu> with “subscribe RFID_LIB” in the body of the message.)

Standards

Prior to 2004, RFID standards did not specifically address the item-level tagging that libraries use. The main standard that most library RFID systems comply with today is ISO 15693, which defines the physical characteristics, air interface, and communication protocol for RFID cards. The ISO/IEC subcommittee on Automatic Identification and Data Capture Techniques (JTC1/SC31) has responsibility for international RFID standards. In September 2004, they issued ISO/IEC 18000, a new series of standards on Radio frequency identification for item management. Part 1 specifies the general architecture and Part 3 addresses air interface communications for the 13.56 MHz type used in library applications. Implementation of the ISO/IEC 18000 standard should enable any compliant reader to talk to any compliant chip at the designated frequency.

Standards in RFID have focused to date on the basic communications architecture and on supply chain applications. Interest in library-specific RFID data model and application standardization is growing and a number of national and international library standards organizations and committees are considering initiatives in the RFID area.

The Danish National Library Authority (DNLA) has investigated the use of RFID in their national library system and identified several requirements that must be in place before they will endorse its implementation:

- A library with an RFID-solution must function in the interlibrary loan environment. It must be possible to reuse RF-tags from one library in another library which means that standard equipment must be able to read RF-tags from other libraries directly, be able to identify that the material in question belongs to another library, and be able to lend interlibrary-loan material.
- An RFID-solution must function in relation to any given library system with a standardized interface.
- It must be possible to buy RF-tags from different sources, and suppliers of material must be able to provide standardized solutions for all their library customers.
- The material-identification numbers in RF-tags must use the same model to ensure against overlapping numbers used for bar codes. To the greatest possible extent bar codes should still be used (with the same material-identification number as in the RF-tag) in the interests of interlibrary loan cooperation.
The standard is designed primarily for information providers, library managers, and those who collect data from libraries. It helps them to identify, define, collect, and interpret statistical data used to describe the status and condition of libraries in the U.S. It also assists the community in collecting the data necessary to support research and analysis aimed at improving the performance of libraries and enhancing library effectiveness. Significant additions were made in the 2004 revision to address measurement of electronic resources and services.


**Conclusion**

RFID technology offers libraries significant benefits to reduce labor costs and improve patron service. Like any evolving technology, however, many questions remain about how to best utilize RFID and when is the right time for implementation. For many libraries, that time is now. Other libraries are taking a more conservative wait-and-see approach, either for cost reasons or to let standards stabilize and to resolve issues about privacy and interlibrary loan.

**References**


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**NISO NEWS AND NOTES**

**NISO To Release Library Statistics Standard as Web-Based Database**


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NISO WANTS YOUR INPUT ON RFID

NISO is convening a meeting of experts in the first quarter of 2005 to discuss RFID in libraries and the need for standards or guidelines. We would like to hear from you about the specific RFID issues where you feel NISO can play a role in developing such standards or guidelines. Please email your comments and suggestions to nisohq@niso.org by December 31, 2004.
The data dictionary approach will enable key word searching within the standard and more accessible viewing of specific metrics described in the standard. “It also leverages the flexibility of HTML and XML to embed links to library surveys,” explained Denise M. Davis, Director, Office for Research & Statistics of the American Library Association and Chair of the NISO committee handling the revision. “The data elements in the standard are mapped to the specific surveys that collect and report that data.”

The six categories of data addressed in the standard are: reporting unit and primary target population, human resources, collections, infrastructure, finances, and services. Additional information is provided in the appendices for methods of measurement, measuring the use of electronic library services, collecting network statistics, and national and international efforts regarding electronic metrics.

A Typology of Formats table provides specific guidelines based on an object’s data type, application, and format. A summary table of Metadata Schemes includes links to best practices and guidelines for using the schemes most commonly in use in cultural heritage institutions.

The Framework is available in both HTML and PDF formats from the NISO website.

This revision was produced by the NISO Framework Advisory Group: Priscilla Caplan chair (Florida Center for Library Automation); Grace Agnew (Rutgers University); Liz Bishoff (OCLC, Inc.); Rebecca Guenther (Library of Congress); Ingrid Hsieh-Yee (Catholic University); with assistance from students Amy Alderfer (Catholic University) and Jen Childree (Santa Fe Community College).

**NISO Standards Highlighted at Access 2004**

NISO standards were well represented in several presentations at the Access 2004 conference held in Halifax, Nova Scotia, October 13–16.

Jenny Walker, VP Marketing and Business Development, Ex Libris, Inc, discussed the NISO Metasearch Initiative, which she co-chairs, in her presentation, Collaborative efforts towards effective metasearch. She reviewed the key issues currently being addressed by the Metasearch committee and reported on the current status of the three task groups.

William E. Moen, Associate Professor, School of Library and Information Sciences, University of North Texas, presented A Web Services Approach for Search and Retrieve: The Next Generation Z39.50. Bill discussed the recently released specifications for the Search/Retrieve Web Service (SRW), which builds on the ANSI/NISO Z39.50 standard. (See the separate article on page 7 regarding NISO’s registration of the SRW protocol.)


Access 2004 is an annual Canadian conference for library information professionals.
NISO Metasearch Survey Identifies Current Practices and Need for Standards

NISO announced results of a survey of content providers and ILS vendors on the current state of metasearching and their level of interest in developing standards in the metasearching arena. Conducted by the Search/Retrieve Task Group of NISO’s Metasearch Initiative, the survey collected input from non-profit organizations, content aggregators, government, commercial and academic publishers, library management systems vendors, and consultants.

Key results include the following:

- 83 percent are aware of current metasearching activity on their database(s).
- 54 percent do not have a policy regarding metasearching of their offerings.
- Of those who do have a policy, 30% do not allow metasearching of their database(s).
- 54 percent believe that allowing metasearching of their offerings is very important to their customers and 37 percent believe it is somewhat important.
- 86 percent plan changes or enhancements to their current services.
- Of those who allow metasearching of their offerings, 70 percent think standards and guidelines in metasearching would be very important to their business.

A number of metasearch search and retrieval methods are currently in use, with many providers supporting more than one access method: http/html based (76%), Z39.50 (64%), XML/SOAP (33%), SQL (30%), and 25% utilizing a legacy system, usually with Telnet based access.

The most common format for displaying search results is as an HTML page (84%), followed by MARC 21 (63%), proprietary XML (53%), Dublin Core (26%), and GRS-1 (21%). Although RSS (Rich Site Summary, a method for providing automated feeds) and WSDL (Web Services Description Language, a method for specifying a service and its operations) are not used by most suppliers today, 29% indicated plans for future support.

Respondents cited several benefits for allowing customers metasearch access: an increased customer base (79%), gaining a competitive edge (58%), and opportunities for partnership (53%). However, metasearching also presents content providers with a number of concerns including: loss of control over search results (53%), loss of branding (53%), digital rights management (47%), customer support problems (42%), excessive use of system resources (37%), and the amount of communications required with other suppliers (21%).

These concerns are fueling the interest in standards and guidelines. The main areas where respondents indicated a need for standards was in: searching options (83%), results set management (67%), metasearch identification (67%), resource description (61%), and access management (56%), and statistics (50%).

The survey results will be used by the NISO Metasearch Initiative task groups to guide and prioritize next steps.

METS and SRW/SRU Receive NISO Registration

The two newest NISO registrations are the Metadata Encoding & Transmission Standard (METS) and the SRW/SRU Search/Retrieve Web Service protocols.

METS is an XML-based schema for encoding descriptive, administrative, and structural metadata regarding objects within a digital library. It is of particular interest to cultural memory institutions, such as archives, libraries and museums, which are building repositories of digital content and would like to have a single, standardized format for archiving digital objects and exchanging them with other institutions. METS can simplify the task of developing software tools for handling digital library materials and offers open source developers a standard data format for enabling digital library services. Because it provides a single, flexible format capable of delivering a variety of metadata and associated content to customers such as libraries, METS may also be of interest to the publishing community. METS was developed as an initiative of the Digital Library Federation. Ongoing development and administration are handled by the METS Editorial Board. The Library of Congress is the METS Maintenance Agency.

The Search and Retrieve Web Service (SRW) and Search and Retrieve URL Service (SRU) protocols have roots in attempts in the mid-to-late 1990’s to make Z39.50 a Web-friendly protocol. SRW/SRU are Web Services-based protocols for querying databases and returning search results; their difference lies in the ways the queries and results are encapsulated and transmitted between client and server applications. The SRW Initiative incorporates several Z39.50 features, enabling the creation of gateways to existing Z39.50 systems. SRW/SRU was developed by ZING (Z39.50 International Next Generation) and is managed by the SRW Editorial Board. The Library of Congress is the SRW/SRU Maintenance Agency.

Follow the activities of the Metasearch Initiative: http://www.lib.ncsu.edu/niso-mi/index.php/Main_Page

For more info visit: METS: http://www.loc.gov/standards/mets/ SRW/SRU: http://www.loc.gov/srw
Blue Ribbon Panel Takes on Future of NISO

With a charter to evaluate the progress, challenges, and opportunities of the National Information Standards Organization (NISO), eleven experts from industry, academia, and the library community have accepted seats on NISO’s Blue Ribbon Panel. The Panel will play a central role in the yearlong strategic planning exercise, which NISO’s Board of Directors launched in May 2004. The Mellon Foundation has provided funding in support of the Panel. The Panel’s formal report will be open for public review and comment later this year.

“We are extremely pleased that Clifford Lynch has agreed to chair the Blue Ribbon Panel of respected community leaders who will provide objective advice and guidance to the Board,” noted Jan Peterson, NISO Board Chair and Vice President, Content Development, of Infotrieve, Inc. “The commitment of these highly regarded individuals is further confirmation of the importance of standards in the distribution of information, as well as NISO’s role in developing those standards.”

Clifford Lynch, Executive Director, Coalition for Networked Information, has earned recognition in the information community for his contributions to awareness and understanding of issues facing digital libraries, such as digital rights management and digital preservation. In accepting the role of Panel Chair, he stated, “The landscape for making and using standards has changed drastically in the last few years, raising new issues and choices for NISO. A key goal of this panel is to take a dispassionate, external, and multi-dimensional look at this landscape to offer guidance and frame possible futures for the NISO board, and I am sure I speak for everyone on the panel in saying that we are glad to be of help to NISO at this important juncture in its organizational evolution.”

In addition to Lynch, NISO’s Blue Ribbon Panel includes (in alphabetical order) Lorcan Dempsey, Vice President of Research, OCLC, Inc.; Karen Hunter, Senior Vice President, Elsevier Science, New York, NY; Ron Larsen, Dean, School of Information Services, University of Pittsburgh; Sarah Ann Long, Director of the North Suburban Library System, Wheeling, Illinois; Deanna Marcum, Associate Librarian for Library Services, Library of Congress; Eric Miller, Semantic Web Activity Lead, World Wide Web Consortium (W3C); Kent Smith, Retired, former Deputy Director, National Library of Medicine; Diana Oblinger, Vice President for EDUCAUSE; Jenny Walker, Vice President Marketing and Business Development, Information Services Division, Ex Libris, Inc., Newton, MA; and Ann Wolpert, Director of Libraries, Massachusetts Institute of Technology.

Carnegie Mellon and NYU Earn Slots on NISO’s SDC

NISO has added representatives from two universities to its Standards Development Committee (SDC). Denise Troll Covey of the Carnegie Mellon University Libraries and Jerome McDonough of the New York University Libraries join the ten-member committee for a three-year term. The SDC has overall responsibility for identifying new topics for standardization, evaluating proposals for new standards and guidelines, and monitoring the need to revise approved NISO standards and guidelines.

“SDC members must have technical expertise combined with vision,” noted Pat Harris, NISO Executive Director. “They have a profound impact on NISO’s program of work.”

As Principal Librarian for Special Projects at Carnegie Mellon, Denise Troll Covey conducts research to inform library administration and strategic planning. She manages the Libraries’ performance measures and keeps abreast of technological developments, their social implications, and the laws, policies, practices, and standards relevant to digital libraries.

Jerome McDonough is Digital Library Development Team Leader for the New York University Libraries, and is also serving as chair of the editorial board for the Digital Library Federation’s METS initiative. Before taking his current position at NYU, McDonough worked for the Library Systems Office at the University of California at Berkeley on the Making of America II project.

Patricia Stevens (OCLC, Inc.) is the current chairperson of SDC. Additional members include: Rebecca Guenther (Library of Congress), Patricia R. Harris (NISO), Clifford Morgan (John Wiley & Sons Ltd), Peter Noerr (MuseGlobal, Inc.), R. P. Channing Rodgers, MD (National Library of Medicine), and Jenny Walker (Ex Libris, Inc.).

NISO Launches Monthly E-Newsletter

NISO Newsline, a monthly e-newsletter highlighting NISO news and timely reports on significant developments, events, and trends in the information standards world, was launched October 2004. You can subscribe for free by sending an email to nisohq@niso.org and putting “Subscribe Newsline” in the subject line. NISO Newsline will be delivered to your in-box the first Wednesday of each month.

NISO Sessions at ALA Midwinter 2005

NISO will be holding three sessions at the American Library Association midwinter meeting in Boston.

On Friday, January 14, NISO’s Automation Vendors Information Advisory Committee (AVIAC) will hold a roundtable featuring updates on NISO standards implementation including NCIP, OpenURL, Networked Reference, and ISBN.

A “Hot Topics” Discussion Group on Saturday, January 15, sponsored by NISO and MARS (the ALA Machine-Assisted Reference Section), will focus on NISO’s Metasearch Initiative (MI). The goal of NISO’s Metasearch Initiative is to enable: metasearch service providers to offer more effective and responsive services, content providers to deliver enhanced content and protect their intellectual property, and libraries to deliver services that distinguish their services from free web services. An update will be given on the activities of the three NISO MI Task Groups.

NISO Standards Update will be held on Sunday, January 16, featuring a round-up of NISO’s ongoing standards development activities and news on what’s on the drawing board in such key areas as digital rights expression, information identifiers, and digital preservation and archiving.

NISO New Members: The Cherry Hill Company and INFLIBNET

Two new organizations have joined NISO as voting members: The Cherry Hill Company and INFLIBNET.

The Cherry Hill Company, located in Los Angeles, California, provides systems integration and technology consulting services to libraries, government, and business. They specialize in Web-based applications and have developed LibrarySite™, a customizable Web site development and management package, designed especially for libraries. Cherry Hill’s voting representative to NISO is Cary Gordon.

INFLIBNET, located in Ahmedabad, India, is devoted to becoming a gateway to India’s academic and research communities. An autonomous information center of India’s University Grants Commission, INFLIBNET provides document delivery services, access to online and CD-ROM bibliographic databases, development of union catalogs of academic libraries in India, and an online experts database of faculty in Indian universities. T A V Murthy is INFLIBNET’s voting representative to NISO and Rajesh Chandrakar is the alternate.

Library of Congress Announces NDIIPP Awards of $15 Million

The Library of Congress announced on September 30 awards of $15 million to eight institutions and their partners to participate in the building of the National Digital Information Infrastructure and Preservation Program (NDIIPP). These awards will be used to preserve at-risk digital materials of significant cultural and historical value to the nation.

The winning lead institutions and the subject of their projects are:

California Digital Library at the University of California to develop Web archiving tools to capture, curate, and preserve collections of Web-based government and political information.

University of California at Santa Barbara to create a National Geospatial Federated Digital Repository infrastructure.

Educational Broadcasting Corporation (Thirteen/WNET New York) to establish the first procedures, structures, and national standards to preserve public television programs produced in digital formats.

Emory University to develop a MetaArchive of Southern Cultural Heritage.

University of Illinois at Urbana-Champaign Library, Graduate School of Library and Information Science, and National Center for Supercomputing Applications to develop criteria for determining which digital materials to capture and preserve, as not all digital material can or should be preserved.

University of Maryland, Robert H. Smith School of Business, to preserve at-risk digital materials from the American business culture during the early years of the commercialization of the Internet.

University of Michigan, Inter-university Consortium for Political and Social Research, to identify, acquire, and preserve data used in the study of social science.

North Carolina State, University Libraries, to collect and preserve digital geospatial data resources, including digitized maps, from state and local government agencies in North Carolina.

For a complete list of partners, award amounts, and more information on projects, read the full press release at: http://www.digitalpreservation.gov/about/pr_093004.html

NATIONAL STANDARDS NEWS
NFAIS Online Usage Statistics Forum Report

The National Federation of Abstracting and Indexing Services (NFAIS) sponsored a forum on October 1 for Online Usage Statistics: Current Trends and Future Directions in Meeting User Needs.

Presentations included an historical overview, a discussion of emerging standards, a panel representing user needs by sector, use of technology in generating statistics, legal and privacy issues, and implementation case studies from ProQuest, Thomson Scientific, and the H.W. Wilson Company.

The COUNTER (Counting Online Usage of Networked Electronic Resources) Code of Practice was discussed in various contexts by several of the speakers. Other statistics guidelines and standards mentioned included the International Coalition of Library Consortia (ICOLC) Guidelines for Statistical Measurements of Usage of Web-based Information Resources, the Association of Research Libraries (ARL) eMetrics project and, the NISO Z39.7 Library Statistics standard. (See the separate article in this issue about the new Z39.7 revision.)

A key point made by many of the speakers was that although collecting metrics is vital, usage does not equate to value.

Presentation slides are available from:
http://www.nfais.org/events/event_details.cfm?id=26

New Guidelines Aid in Providing Virtual Reference

Two new resources have been issued to aid libraries in the fast-growing arena of providing virtual reference services over the Internet.

The American Library Association Reference and User Services Association (RUSA) has developed Guidelines for Implementing and Maintaining Virtual Reference Services “to assist libraries and consortia with implementing and maintaining virtual reference services.” The guidelines are presented in a concise bulleted format which can be used as a checklist for preparing for virtual reference, setting parameters for providing the service, addressing organizational/infrastructure issues, and ensuring patron privacy. The RUSA guidelines include a recommendation for using the NISO Question/Answer Transaction Protocol (NISO Z39.90, currently in trial use).

The Digital Reference Education Initiative (DREI) is an effort of the School of Information Studies at Syracuse University, with funding from the Institute for Museum and Library Services (IMLS), to develop tools and training in digital reference. They are seeking comments on their working draft of core competencies for digital reference education and practice, Rubrics for Digital Reference Service Providers. Each competency subject area defines three levels of competency, with emphasis on skills, concepts, and administration, respectively. These latest guidelines are one of many related documents that DREI has developed addressing competencies, reference policies and guidelines, and publicity and marketing of digital reference services, which are available on their website (drei.syr.edu).

The RUSA Guidelines are available from:
http://www.ala.org/ala/rusa/rusaprotocols/referenceguide/virtrefguidelines.htm
Review the DREI Rubrics at:
http://drei.syr.edu/details.cfm?ContentID=184
NISO’s Question/Answer Protocol is available on the NetRef committee’s website:
http://www.loc.gov/standards/netref/

U Conn Libraries to Hold JPEG2000 Summit

The University of Connecticut Libraries will be holding a two day summit on JPEG2000 on November 4 and 5, under the leadership of Peter Murray. Approximately 50 individuals representing the library and archives communities, developers of the JPEG2000 standard, selected vendors, and image and signal processing scientists will be invited to participate in tutorials and dialogues.

For many years, libraries and archives have used the JPEG and TIFF coding standards to store images in electronic format. This older JPEG format uses a “lossy” form of compression that sacrifices image detail. The TIFF standard provides options for compression that do not affect image fidelity but few have gained wide acceptance and those that have are based on patented algorithms. By comparison, the compression scheme used by JPEG2000 provides for “lossless” compression and is free of license and royalty restrictions.

These older standards were also not designed to integrate the presentation of technical and descriptive metadata associated with images that has become so crucial to long-term usability. JPEG2000 introduces the concept of metadata bundles within the file format itself, permanently associating the metadata with the image in one digital object.

While JPEG2000 has been adopted in many industries and is starting to appear in the general marketplace, libraries and archives have not yet widely adopted the standard. The goal of the summit is to act as a catalyst for the library and archives communities to implement the new standard and to facilitate development of best practice guidelines.

Watch for a summit report in a future issue of ISQ.
ISO Information and Documentation Committee Sets Work Program

NISO hosted the 2004 meeting week and plenary meeting of ISO Technical Committee 46, Information and documentation, in Washington, D.C. the week of October 25-29. Representatives from 22 member and observer countries reviewed progress and made future plans. Subcommittee 4, Technical interoperability, and Subcommittee 9, Identification and description, held separate plenary and working group meetings. (See the articles on p. 12 about the ISBN and ISSN standards.)

Resolutions and recommendations made at the meeting included:

- Responsibility will be transferred to ISO/IEC JTC1/SC2 for the character set codes for the Glagolytic alphabet (ISO 6861), part 2 of the Latin alphabet extension (ISO 5426-2), the Hebrew alphabet (ISO 8957), and the Cyrillic alphabet extension (ISO 8957). JTC1/SC2 is the committee responsible for the Universal Character Set (ISO 10646).
- A revision of ISO 2709, Format for information exchange, will be drafted. Additionally, a new work item will be established to define an international MARC-XML format compatible with ISO 2709.
- ISO 2146 will be revised with a new name, Directories of libraries and related information, and the incorporation of an underlying data model. The working group’s goal is to have a committee draft by June 2005.
- The consolidation and revision of the five parts of ISO 8459, Bibliographic data element directory, was recommended to be made available, when completed, as a free online database as well as a PDF document. To date the working group has identified 536 data elements and added data structures from eight protocols and two data formats.
- A merger and revision of parts 1 and 2 of ISO 690, Bibliographic References, will be undertaken by a new SC9 working group. Particular emphasis will be on defining bibliographic references to electronic documents.
- The Version Identifier for Audiovisual Works (V-ISAN) project was reorganized to split the draft document into two parts. The normative parts will become the future part 2 to the ISAN standard, ISO 15706. An accompanying technical report (TR 20925) will contain the informative operational guidelines.
- The International Standard Text Code (ISTC) project will be reinstated with a target date of May 2006 for publication. A consortium comprised of CISAC, Nielsen BookData, and R.R. Bowker was selected as the future Registration Authority, subject to the approval of ISO’s Technical Management Board.
- The International DOI Foundation is invited to submit a proposal and preliminary draft for an ISO standard on the Digital Object Identifier. This proposed international standard will be more encompassing than the NISO DOI syntax standard (ANSI/NISO Z39.84).
- The Finnish Standards Association is invited to submit a proposal and preliminary draft for a standard collection identifier for libraries and related information organizations.

The next TC46 plenary meeting will be held February 6-10, 2006 in Chiang Mai, Thailand.

Content Delivery and Rights Management Study Issued as ISO Technical Report

ISO TC 46/SC9 has published Content Delivery and Rights Management – Functional Requirements for Identifiers and Descriptors for Use in the Music, Film, Video, Sound Recording, and Publishing Industries as ISO TR 21449. By releasing this commissioned study as an ISO Technical Report, SC 9 hopes that the publication will reach a wide audience. The first section of TR 21449 is an analysis of the business and information transactions that take place among the content industries in the course of production, distribution, and rights management. The remaining sections of TR 21449 provide a structured set of requirements for identifiers and associated descriptive schema in support of those functions.

The report will be of interest to organizations involved in national administration of information identifier systems (e.g. ISBN, ISSN, ISRC, ISAN, ISWC, and ISTC); collecting societies; and other organizations involved in the administration of rights for use of content in the information supply chain.

ISO Technical Report 21449 is available for purchase (in separate English and French editions) from the ISO’s online sales outlet.

Selected excerpts from TR 21449 can be previewed at: http://www.lac-bac.gc.ca/iso/46sc9/21449.htm
ISSN Working Group Addresses Multi Use Issues

The ISO Working Group (WG) tasked to revise the ISSN standard met in October during the ISO TC46 meeting week (see article on p. 11). The WG’s discussion focused on how to resolve the issue of whether an ISSN should be a title identifier (regardless of medium) or a product identifier, and how to ensure an ISSN would function with the growing use of Internet namespace identifiers.

A consensus developed that the ISSN is an identifier that should continue to occupy a middle ground between the “work/title” level and the “product” level. Thus it was agreed that the ISSN will continue to identify serials and other continuing resources by means of separate ISSN assigned to different media, language, geographic, and audience editions. However, the WG also agreed that there is a need for the ISSN to operate as part of mechanisms that would function at the title-level to bring related ISSN’s together and at the product-level to identify and differentiate actual physical and electronic entities that are marketed. For serials that have multiple medium-specific ISSN, the committee developed the concept of designating one of them as a title-level ISSN that would be identified by some mechanism like “T:...”. Guidance would be provided on how such a title-level ISSN could work within systems such as URN, “Info” URI, DOI, and OpenURL.

The WG formed three ad hoc groups. One group will identify issues relating to using ISSN for title-level identification and recommend how the ISSN could be used in other naming systems such as DOI, SICI, OpenURL and the new “Info” URI scheme. This group will seek out and liaise with the organizations and parties that administer those name spaces. A second group will work with publishers, aggregators, and other interested parties on how a product-level identifier could be developed and how it would interface with the ISSN. The third ad hoc group will identify various lookup services that might be offered by the ISSN International Centre (and possibly other parties) that would help support use of the ISSN in the electronic environment, and relate the ISSN Register to the higher and lower levels of identification described above. One example could be a service that looks up an ISSN and returns all of the other ISSN that are related in some way to it.

The Working Group agreed to meet again in February 2005.

13-Digit ISBN Standard Approved

Voting on the revision of the International Standard Book Number (ISO/DIS 2108) ended July 19, 2004 with 100% approval by the member countries that voted. These results meet the ISO criteria for immediate advancement to publication as the 4th edition of ISO 2108. As reported in previous issues of ISQ, the most significant change in the new version is the move to a 13-digit ISBN, effective January 1, 2007. All 10-digit ISBNS in circulation will have the 3-digit EAN prefix “978” added. Conversion utilities are expected to be available in 2005.

Approval will be sought from ISO’s Technical Management Board for the International ISBN Agency to be established as a not-for-profit legal entity, funded and governed by the local ISBN agencies, to be effective no later than April 1, 2006.

Members of TC46 recognized the exceptional contributions of the Staatsbibliothek zu Berlin in ensuring the growth and success of the ISBN system through its efforts as the Registration Authority for ISO 2108 during the past thirty-five years and extended its sincere appreciation to Dr. Hartmut Walravens and the dedicated staff of the International ISBN Agency for the excellent service they have provided to the global ISBN community.

COUNTER Adds XML DTD and Changes Compliance Process

COUNTER (Counting Online Usage of NeTworked Electronic Resources) has developed an XML DTD for the Usage Reports specified in the COUNTER Code of Practice. The DTD enables vendors to make COUNTER-compliant usage reports available as an XML document, allowing customers to merge reports from multiple vendors. It also sets the stage for future development of toolkits to simplify and automate the collection, processing, and presentation of usage reports.

COUNTER has also made changes to their compliance registration process. Products, rather than vendors, will be certified and registered as compliant. Secondly, vendors will be required to provide at least one of the COUNTER library test sites with access to their usage reports for up to three months before being designated as compliant and added to the register.
UK e4books Report Recommends E-commerce Improvements

e4books, a research project to increase the implementation of e-commerce in the book industry, has issued their report of findings and recommendations, *The Road to Universal E-commerce for the Book Industry*. The underlying research included all types of publishers, distributors, booksellers, wholesalers, system suppliers, and e-commerce suppliers. Among the report’s recommendations are:

- Adopt a target “e-Day” when a minimum level of e-commerce is implemented industry-wide. May 1, 2008 is proposed for e-Day, as it is a year after the ISBN13 implementation.
- Service providers should collaborate to provide bundled and integrated services that cover the spectrum of the e-commerce supply chain.
- Develop a robust source of information and a book trade e-commerce website covering options, costs and benefits, best practices, case studies, directories of service and technology companies, etc. Existing information needs to be rewritten to be less technical and more customer, rather than provider, focused.
- Develop and offer training seminars on book trade e-commerce that is independent of any particular vendor or service company.
- Encourage smaller retailers, publishers, and distributors to invest in broadband Internet access.
- Establish loan or grant funds to help smaller companies get over the initial entry cost barrier.
- Develop standards and “middleware” that address the system integration issues.

The e4books report was commissioned by The Book Industry Communication (BIC) and sponsored by the Publishers Association, the Booksellers Association, Nielsen BookNet, PubEasy, and VISTA International. The e4books report was prepared by industry consultant, Simon Edwards.

IMS Global Issues

AccessForAll Meta-data Spec

The IMS Global Learning Consortium has issued version 1.0 of *AccessForAll Meta-data*, specifying the accessibility meta-data that is able to express a resource’s ability to match the needs and preferences of a user’s profile. (The user profile is defined in the previously issued specification, *Accessibility for Learner Information Package*.) The *AccessForAll* specification is intended to be applied in computer-mediated delivery of educational resources by capitalizing on the capability of the computer to translate or transform user interfaces and resource delivery. Going beyond resource discovery, the specification also provides a framework for the substitution and augmentation of a resource to meet the accessibility needs and preferences of a user. For example, a text caption could be added to a video when required by a user with a hearing impairment or in a noisy environment.

This work represents an open collaboration between working group members from IMS, Dublin Core, IEEE, CEN-ISSS, and Eduspecs to create a unified approach across the participating specifications bodies.


The AccessForAll Meta-data spec is available from: http://www.imsglobal.org/accessibility/

MAKING THE MOST OF STANDARDS

Standards and Patents: Resolving Conflicts

*by Maryann Karinch*

On September 16 NISO participated in an invitation-only event to see if some lessons can be learned from recent high-profile intellectual property cases that have brought to light the tensions that can come into play when standards and patents co-exist. *The Future of Standards Setting*, organized by the JEDEC Solid State Technology Association, brought together standards developers and top attorneys from the corporate world (including Microsoft and HP).

Like other ANSI-accredited organizations, NISO standards can integrate elements protected by patent or copyright as long as the contributor agrees to license that intellectual property (IP) on a Reasonable And Non-Discriminatory (RAND) basis. The IP-related problems that have shaken the standards world relate to RAND. A few strong voices in the room argued that the future of standards setting is bleak unless standards organizations adopt a royalty-free policy similar to the model used in the open source community.

Discussion centered on the Rambus case. Rambus, a designer of DRAM (Dynamic RAM, the most common kind of random access memory in personal computers),
did not disclose a relevant patent during the formal standards setting process conducted under the umbrella of JEDEC, a semiconductor engineering standardization body of the Electronic Industries Alliance (EIA). After the DRAM standard was adopted, with about 95% of the computer memory market in compliance, Rambus sought to collect royalties from the DRAM chip manufacturers. Rambus’ non-disclosure in the context of the standards-setting process effectively eliminated the group’s ability to pursue alternative designs early-on.

Standard Development Organizations (SDOs) expect standards participants to disclose essential patents. If they don’t, however, have they broken any laws? This is a question at the heart of the Rambus case.

A Federal Trade Commission (FTC) complaint against Rambus hinged on the point that JEDEC — like so many other standardization bodies — has an open process of standards setting that depends on good faith disclosures. In legal terms, the FTC concluded that the company’s conduct excluded competition on a basis other than efficiency, is by nature misleading, violated a duty to disclose as required by JEDEC, and was, in fact, a conscious effort to subvert the rules. The latter, said the FTC, is an action intended to restrict competition and the FTC sought to bar Rambus from enforcing patents filed prior to its withdrawal from JEDEC in 1996.

Several of the lawyers on the seminar panels admitted that, when the FTC filed the complaint, they thought it was a slam-dunk antitrust case. Certain actions pointed to Rambus’ ill intent, they believed. Specifically, the FTC pointed to Rambus’ withdrawal from JEDEC immediately following the FTC case against Dell Computer Corporation in 1995. (In the Dell case, the FTC determined that failure to disclose relevant patents or pending patents could result in a loss of those patent rights.)

In February 2004, an Administrative Law Judge sided with Rambus and dismissed the FTC complaint — an action that the panelists felt will not hold the FTC back from pursuing the Rambus case further. The FTC may simply decide that the issue of public interest overrides other legal arguments.

Is the Rambus case an example of failure on the part of a standardization body?

On a practical and immediate level, what can a standardization body do? NISO already acts on the fundamental advice given: Don’t assume that technical committee participants will follow the rules, even if they know them. NISO requires all committee participants to disclose their patent interests upfront, and says so. Because there can be differences between the way a patent policy is explained orally and the way it’s written, “Get it in writing” surfaced at the seminar as an important piece of advice. Andrew Updegrove, with the Boston-based firm of Gesmer Updegrove LLP, advises clients to give a copy of their policy to voting representatives and have them check boxes to indicate they understand their obligations. Another suggestion was to do “whatever it takes to make sure the policies are clear.” Several panelists urged standards developers to revisit the language in their policies so terms such as “good faith” and “disclosure” have well-defined meanings.

Participants also had different opinions of what RAND means, and, specifically, what constitutes a reasonable royalty. Rambus asserts that the royalties it is charging chip manufacturers are reasonable. According to seminar panelists, these royalties could reach $5 billion in a $30 billion industry. To highlight the potential economic impact on consumers of royalties — reasonable or unreasonable — Sun’s Director of Standards, Carl Cargill, pointed out that a cell phone relies on 137 essential patents.

NISO standards, in fact all American National Standards, as consensus documents, should reflect the combined interests of vendors and consumers. In the ANSI community, it has long been acknowledged that companies having pre-eminence in an area are also likely to have patents in that area; their contributions to standards are, therefore, not only welcomed, but also vital. As one panelist put it, “If you don’t have the key contributors proposing technology within an SDO, then the resulting standard may not achieve its goal.” One way to engage companies with superior technology to the standards setting table is to offer a RAND policy to ensure that, with their contributions, certain rewards will follow.

Patent policies can have an important role in shaping the future of standards setting. ANSI itself has launched an effort, now in its second year to examine all of its rules pertaining to intellectual property so that it can better guide accredited bodies. This is important work as it keeps the standards community vital. First, because standards setting is a more flexible alternative to government regulations. Second, because standards, by their nature, support predictable outcomes—and predictable outcomes provide an element of risk control in an unpredictable business environment.

Streaming audio presentations from the meeting are available from: http://www.standardsconference.org/listen.htm

For a recent article on the Rambus case, visit: http://www.computerweekly.com/Article133417.htm#

NISO’s patent policy, adopted September 25, 2003, is available from: http://www.niso.org/about/secure/Documents/NISOPatent.pdf
STANDARDS STATUS: OCTOBER 1, 2004
This is a capsule report on each active NISO standard in development. The list does not include current, approved standards that are not in revision. To learn more about each activity, go to http://www.niso.org/standard.html
Note: DSFTU stands for Draft Standard for Trial Use.

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NEW NISO REGISTRATIONS
For more information on these standards and the NISO registration process, visit: http://www.niso.org/registration/registration.html

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Copyright Issues in Digital Media
U.S. Congressional Budget Office
Reviews current copyright law in the U.S. and considers the unique aspects of digital technology’s challenge to that law. Also examines the prospects for a market-based resolution to copyright disputes over digital content and explores the effect of potential revisions to copyright law.
http://www.cbo.gov/showdoc.cfm?index=5738&sequence=0
August 2004

International DOI Foundation 2004 Members Meeting
Presentations include a keynote speech by David Worlock, EPS, on “DOI in context,” update reports from the IDF Director and the Registration Agencies, sessions on DOI tools and technologies, and a panel session on uses of identifiers.
http://www.doi.org/doi_presentations/members_meeting_2004/agenda.html

Metadata Leadership
Discusses how libraries need to accommodate bibliographic records encoded with metadata standards such as Dublin Core, MODS, and VRA Core along with their traditional MARC and AACR2 cataloging.
http://www.libraryjournal.com/index.asp?layout=articleArchive&articleid=CA443949

RDN/LTSN Partnerships: Learning resource discovery based on the LOM and the OAI-PMH
Describes a collaboration to enable the sharing of records within and beyond partnerships using the Open Archives Initiative Protocol for Metadata Harvesting and an application profile of the IEEE Learning Object Metadata.
http://www.ariadne.ac.uk/issue39/powell/

Reengineering a National Resource Discovery Service: MODS Down Under
The National Library of Australia is reengineering its Kinetica resource sharing service using MODS (Metadata Object Description Schema). This article describes the use of MODS to transform records for digital resources into MARC records for resource discovery.
http://www.dlib.org/dlib/september04/missingham/09missingham.html

URI Resource Pages
Library of Congress Network Development and MARC Standards Office
Provides information and links relevant to the library community about Uniform Resource Identifiers (URIs), the “info” scheme, and latest URI-related developments.
http://www.loc.gov/standards/uri/

XML: Too much of a good thing?
Discusses whether the explosion of XML schemas is a testament to the format’s success or is creating new interoperability problems.

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