Taking Stock of the Virtual Library: Services and Standards

By Priscilla Caplan, Florida Center for Library Automation

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Like many terms describing Internet technologies, the phrase "virtual library" means different things to different people, and even within the library community there are some subtle and interesting variations in usage.

Sites on the Web that call themselves virtual libraries will invariably be topically organized lists of links to other websites or web-accessible resources. A good example is the "WWW Virtual Library" (<http://vlib.org>), a loose confederation of nearly 300 topical sites dealing with everything from aboriginal studies to zoos. Most topical virtual libraries are part of the official websites of governmental or educational organizations and are not maintained by library organizations. The U.S. National Information Infrastructure has a virtual library, as does the California Criminalistics Institute.

These sites match the definition of virtual library commonly used on the Web: "A virtual library is an organized set of links to items on the network" (<http://life.csu.edu.au/gis/finland/sin/>). Sometimes the role of the information professional in organizing the links is emphasized, as in this definition from Searching and Researching on the Internet and the World Wide Web (second edition): "Virtual libraries are directories with resources that librarians or cybrarians have organized in a logical way" (<www.webliminal.com/search/search-web04.html#Virtual Libraries: Directories with a Difference>).

One of the most satisfying definitions that I found was, surprisingly, from a high school website: "Virtual Libraries are types of directories (subject catalogs) consisting of WWW resources which librarians or information professionals have selected, evaluated, organized, and compiled" (<www.lhwl.lhsa.com/www/virtuallibraries.htm>).

The library community prefers the term "digital library" and, in fact, it is uncommon for a library to call its online presence a virtual library. However, digital libraries are much more than lists of links, and are described in terms of services as well as collections. The California Digital Library, for example, calls itself "an additional 'co-library' of the UC campuses, with a focus on digital materials and services" (<www.cdlib.org/about/faq/>). The Berkeley Digital Library "builds digital collections and services" (<http://sunsite.berkeley.edu>). The British Library's Digital Library Programme places priority on "collecting digital materials and developing digital library services" (<www.bl.uk/index.html>).
Roy Tennant, (Manager, eScholarship Web and Services Design, California Digital Library), attempts to distinguish between virtual and digital libraries. Tennant first defines a library as "an organized collection of items and the services required to make them available." He goes on to define a digital library as "a library consisting of digital materials and services," and a virtual library as "a digital library that does not exist in 'real life'. For example, a virtual library can consist of material from a variety of separate libraries that are organized in a virtual space using computers and computer networks" (<http://sunsite.berkeley.edu/mydefinitions.html>).

In practice, however, the designation "virtual library" seems to be used by librarians most often in relation to consortial environments, for projects that involve combining the assets of a number of library organizations on a state or regional level. This partially conforms to Tennant's definition, as these libraries have no physical equivalent, but it deviates in an interesting way: because consortia often focus on resource sharing, including such functions as interlibrary loan and courier services, these virtual libraries are concerned with paper as well as electronic resources.

The consortial virtual library is a superset of the traditional library, rather than a subset. It deals with collections and services, and includes both digital and non-digital resources. The CIC Virtual Electronic Library, for example, is a cooperative venture of 13 Midwestern universities to make all of their collections and services equally accessible to the students and faculty of each institution. It includes a virtual union catalog, reciprocal circulation policies, resource sharing services, and digital reference services. Similarly, the Kentucky Virtual Library gives all citizens of Kentucky "equitable access to quality library and information resources and qualified, well-trained staff" (<www.kyvl.org/html/about/mission.shtml>). The mission of the Virtual Library of Virginia is to provide "enhanced access to library and information resources for the Commonwealth of Virginia's non-profit academic libraries serving the higher education community" (<www.gmu.edu/library/ien/viva/about.html>).

We have moved from the common concept of the virtual library as a subject directory of web-accessible resources to the concept of the consortial virtual library as a complex organization that offers a range of services. In fact, the more services provided, the more complex the organization must be. An individual can provide a list of links, and a single library can provide a broadcast search interface, but resource sharing must be orchestrated by a formal alliance of institutions with a governance structure and a mechanism for decision-making.

What I will explore in more depth are the collection and service-oriented functions that a virtual library organization might perform, with an emphasis on the standards that exist or are emerging to support these activities.

Access to Bibliographic Data

To provide access to bibliographic data the virtual library would offer union catalog capability, access to commercial citation data, and broadcast search capability.

Many virtual libraries, especially those operated by state and regional networks, include a union catalog of the holdings of multiple library organizations. The union catalog may be physical, in the sense that there is a central database to which the holdings of individual libraries are contributed, or it may be virtual, created by broadcast search of multiple institutional databases.

Virtual libraries may also include indexes to the journal literature provided by commercial abstracting and indexing (A&I) services, such as the American Psychological Association's PsychInfo and the ISI's Web of Science. These may be provided via local loading of the data onto a host provided by the virtual library organization, through links to the vendor's own site, or through a third-party service such as OCLC's FirstSearch. The virtual library organization may negotiate licenses for use of these resources, and may provide some or all of the funding for them.

Broadcast search is a function that may be used with library catalogs alone or with catalogs and other sources of bibliographic data such as the A&I services. Broadcast search allows the user to search multiple databases simultaneously by entering a single query through a single user interface: results may be listed separately for each database or deduplicated and combined into a single retrieval set. The most common way to provide broadcast search is using ANSI/NISO Z39.50, a NISO and ISO (ISO 23950) standard protocol for information retrieval. Most vendors' integrated library systems and resource sharing systems support ANSI/NISOZ39.50, as do standalone products such as OCLC's WebZ and Blue Angel Technology's MetaStar.

Although ANSI/NISO Z39.50 is a relatively mature technology, lately there has been a movement to improve interoperability through the development of "profiles." A common problem when using ANSI/NISO Z39.50 for cross-system search is that different systems have different capabilities, leading to inconsistent search results. For example, one system may have a name index, while another has an author index. If a searcher requests an author search through Z39.50, the first system must either substitute its name index or refuse the search request. In the first case, the searcher may retrieve irrelevant hits such as names used as subjects. In the second case, the searcher will fail to retrieve some relevant items. In both cases, the protocol is working, but the end-user gets unsatisfactory results and is unlikely to understand why.

A Z39.50 profile is a specification for catalogs and other retrieval systems to implement Z39.50 in a particular way.
and to offer a particular set of search capabilities, so that a certain set of searches is guaranteed to work well among implementers of the profile. Currently the most comprehensive profile is the Bath Profile (http://ukoln.ac.uk/interop-focus/bath/), an internationally registered profile maintained by the National Library of Canada. Work is underway by NISO Standards Committee AV to develop a Z39.50 profile for library applications.

Although most library catalog systems support ANSI/NISO Z39.50, not all commercial information services do. A relatively recent development in the marketplace is search interfaces that can include non-Z39.50 data sources in a broadcast search. These products take advantage of the fact that most current information services are web-accessible and use “search URLs,” or queries tacked onto the end of the URL for the database. The products provide scripts that take a user’s query and construct from it the appropriate search URL for each online information service. WebFeat, a product offered by the company of the same name, and the Gale Group’s Total Access are two variations on this approach.

**Access to Digital Content**

While access to bibliographic data is important, access to digital content is the hallmark of a virtual library. This includes functions as providing lists or directories of web-accessible resources, providing access to commercially available full text, and supporting local digitization efforts.

Web directories, discussed earlier, are “virtual library” in the narrowest sense. Virtual libraries as organizations may wish to coordinate the cooperative creation of directories in areas particularly important to them. Portals can also be considered in this context. The term “portal” has referred to websites combining directories and search engines, such as Yahoo! or InfoSpace. In the business world, the enterprise portal has taken on the meaning of a customizable web interface designed to access all content relevant to a company, including data from its internal systems (e.g., inventory, sales, accounting) as well as external resources. In the library community, we have started to think of portals as the traditional portal plus an expanded set of services, including personal customization (“MyLibrary”), authentication and authorization, personal scheduling and calendaring, and discussion groups and chat rooms linked to library resources. Many universities are purchasing or developing campus portals with even wider capabilities. Libraries on these campuses will undoubtedly be requested to conform to the campus portal environment.

The majority of full text content now available commercially is STM (scientific, technical, medical) journal literature. As with A&I citations, the role of the virtual library may be to load the data locally, to facilitate access to remote services, and/or to coordinate or subsidize purchase. An exciting recent development is the rise of reference linking, the ability to click on a citation in the “references” section of a journal article and link directly to the full text of the cited article. Reference linking between articles published by different publishers is now possible for more than 60 publishers participating in CrossRef, accounting for over 3,500 journals and about 2.5 million articles.

Reference linking uses identifiers, such as the DOI (Digital Object Identifier), that point to a single copy of an article, generally the one at the publisher’s own site. Since libraries may subscribe to journal content through any number of arrangements, from local loading to aggregators’ services, going to the publisher’s site may not be the most appropriate place to access the article. Libraries and publishers working together are developing solutions to this “appropriate copy” problem. These solutions all involve the ability to insert a local service component into the process of resolving a link (translating from the identifier used in the link to a URL for the article). The local service may be as simple as substituting a different URL for the article, or more complex approach offering a menu of options to the user, as in the Ex Libris SFX product. The OpenURL standard, now being developed by NISO, is a syntax for piggybacking bibliographic data on a URL, and will be an important component in providing services that are sensitive to the context (e.g., affiliation) of the user.

Books have lagged behind journal articles in the availability of digital full text. This may change as ebooks become more popular with readers and easier for publishers to produce. A barrier on both sides has been the profusion of ebook readers, each utilizing a different data format. However, consolidations in the industry are reducing the number of readers, and the development by the Open eBook Forum (www.openebook.org) of the Open eBook Publication Structure specification (commonly referred to as “OEB”) should stabilize the publication process. Since most of the ebook reader formats can be derived from the OEB format, publishers can create and store a single master file for a book and create derivative files as needed. The Electronic Book Project at the University of Rochester, a grant-funded study of the feasibility of using ebooks in academic, school, and public libraries, found that contrary to expectations, patron acceptance of ebooks in all types of libraries was very good. However, it also found many challenges in the way publishers market and distribute ebooks that will have to be overcome before ebooks can be easily used in the library environment (http://muse.jhu.edu/demo/pla/1.1gibbons.html).

Libraries act as publishers, digitizing content from their collections and making it available over the Web. To date, most digitization projects have been grant-funded and have drawn-on materials in the public domain, but this is slowly changing as libraries make locally digitized collections part
of their collection development strategies. Virtual libraries at a minimum link to this content and may provide cross-collection search capability. Virtual library organizations may provide the software tools to build such collections and/or the hardware to host them. An important role is to promote standardization by collecting best practices, coordinating the development of local guidelines and procedures, and providing both the text of standards documents and the tools to implement them in practice. The Colorado Digitization Project, an initiative to develop a statewide digital library, found "establishing minimum recommended standards as well as guidelines for application of those standards" to be a major part of the cooperative project (http://coloradodigital.coalliance.org/intro.html#Project).

Not all non-commercial digital content arises from retrospective digitization. An increasing amount of content is born digital. In academic environments, this may include important resources such as science and social science research data, faculty eprints, and dissertations. Incorporating materials such as these into the virtual library presents additional challenges, including the need to gather and ingest this content, the need to archive and preserve it, and the need to control access. For example, the Ohio Board of Regents recently announced the OhioLINK Electronic Theses and Dissertation (ETD) site, a free, publicly available database of the work of students in Ohio colleges and universities (www.ohiolink.edu/etd/). The site is taking on archival responsibilities, and will embargo some works (i.e., delay their availability) while the author pursues print publication options.

Resource Sharing Services

Resource sharing is a function of the virtual library that focuses on non-digital materials. Resource sharing services include anything that makes it easier for a person associated with one library to use materials held by another library. Major components include reciprocal borrowing, interlibrary loan, and document delivery.

Reciprocal borrowing, although not primarily a technical issue, can be difficult to establish. Some virtual libraries wish to offer their patrons uniform borrowing policies, while others attempt only to establish some rights of access. Lending policies can differ widely from one institution to another. In some cases lending policies are not directly comparable, as when one library has a patron or material category that another library does not. Nonetheless, for the library user, this is an important component of resource sharing. At least 16 states have established statewide library cards, and Florida seeks to develop one as part of its Florida Virtual Library initiative. Few states, however, have implemented statewide borrower databases.

Interlibrary loan has been revolutionized twice, first in the 1980s with the introduction of OCLC's ILL subsystem, and then in the 1990s through the North American Interlibrary Loan and Document Delivery (NAILDD) Project. Patron-initiated interlibrary loan has become commonplace, and unmediated patron-initiated ILL, once unheard of, is no longer unusual. Vendors now offer ILL interfaces so smart that they not only check the local catalog for the item before forwarding a request to borrow, but also check circulation status to make sure the item, if held, is actually available. Vendors of ILL and resource-sharing systems are implementing the ISO ILL Protocol Standards ISO 10160 and ISO 10161, that specify transactions to support both borrowing and lending activities. As with Z39.50, interoperability is enhanced by adherence to a profile, in this case the ILL Protocol Implementer's Group (IPIG) Profile. While the ISO standards address communication between the borrowing and lending ILL systems, the NISO Circulation Interchange Profile (NCIP) addresses communication between ILL and circulation systems. With NCIP, for example, when a library fills an ILL request, the loan can be automatically recorded in the lending library's circulation system.

Although there are variations, document delivery generally encompasses scanning paper documents (such as journal articles), and transmitting them directly to the requester via fax or e-mail. While document delivery is available through commercial services, virtual libraries may wish to offer their own document delivery services in conjunction with ILL. Vendor products such as Fretwell Downing's VDX software are available to support document delivery activities. These products should include scanning management, workflow management, and rights management functions. The main standards for document delivery are the Group on Electronic Document Interchange (GEDI, ISO 17933) agreements, which define a GEDI header and specify the way documents should be transmitted.

The process of delivering a volume to the borrower to satisfy an ILL request is also a type of document delivery that poses its own challenges. Many virtual library organizations with strong resource sharing components have established courier services to speed delivery of physical items.

Digital Reference Services

Digital reference, also called virtual reference and online reference, is a relatively new component of the virtual library gaining popularity in both public and academic libraries. Digital reference allows a user to submit questions to library staff to be answered by electronic means. Digital reference can be real-time via chat, asynchronous via e-mail, or a combination of both. Currently, library digital reference is most often implemented using customized or modified versions of commercial software designed for managing call centers, web contact centers, e-commerce customer service centers, and similar functions. The software must provide forms for users to submit
questions, notify reference staff when questions arrive, allow interaction between the questioner and responder, track the status of requests, and record questions and answers in a searchable database ("knowledgebase"). Often it is possible for the librarian to push webpages and filled-out forms to the user, and for the questioner and answerer to exchange screens.

Collaborative digital reference is a digital reference service involving multiple institutions. For example, the Metropolitan Cooperative Library System, a multi-type consortium of libraries in Los Angeles and Orange Counties, is offering collaborative digital reference through the 24/7 Reference Project. The Library of Congress is coordinating a large-scale Collaborative Digital Reference Service (CDRS) that now involves more than 100 members. Collaborative digital reference requires additional software support in order to route queries to the most appropriate participant. CDRS members, for example, fill out profiles that include such information as the hours staff are available to the service, their language and subject expertise, and the library's collection strengths. Coded incoming questions are then matched against member profiles and triaged to a suitable answering institution.

There are no widely accepted standards in place for digital reference, although there is general acknowledgement of the need for them. The Question Interchange Profile (QuIP) developed at the Information Institute of Syracuse is used in several applications and may someday form the basis for a standard exchange format for queries and answers. In addition, there is a need for technical standards to allow the interoperability of knowledge bases, standard metrics for measuring service levels, and performance standards for quality of service.

**Statistics and Performance Measures**

An area that is now beginning to receive attention is the generation of statistics and performance measures describing the virtual library. Even simple metrics, such as the number of ejournals subscribed to, are difficult to obtain in the current networked information environment. More complex metrics, such as measuring use, are not only technically difficult to obtain, but also await consistent definition of key terms. To date there is no consensus on what constitutes a session and a use. And there is little agreement on the appropriate logical levels at which to measure use (use of a file, a title, a collection, etc.). The virtual library must often rely on incompatible statistics supplied by various vendors and database providers.

There are a number of efforts to develop uniform measures for electronic content and services. The 1998 Guidelines for Statistical Measures of Usage of Web-Based Indexed, Abstracted, and Full Text Resources of the International Coalition of Library Consortia (ICOLC) provide minimal reporting requirements that are frequently referenced (<http://www.library.yale.edu/consortia/webstats.html>). The U.S. National Commission on Libraries and Information Science (NCLIS) has a major library statistics program particularly useful for public libraries (<http://www.nclis.gov/libraries/lsp/statist.html>). The Council on Library and Information Resources (CLIR) has published a white paper on ejournal usage statistics (<http://www.clir.org/whatsnew.html#white>), and the Association of Research Libraries (ARL) has established an e-metrics project to explore the feasibility of collecting data on the usage of all electronic resources (<http://www.arl.org/stats/newmeas/emetrics/index.html>). The National Information Standards Organization (NISO) recently held a workshop inviting participants in all of these initiatives to review the statistics landscape and recommend some next steps; it looks like work may proceed on a common vocabulary, or dictionary of terms in use by different constituencies.

In any case, all this activity can be taken as indicative of a clearly perceived need for uniform collection counts, usage statistics, and performance measures relevant to digital content and services. Success will come only through a community effort that engages primary and secondary publishers, providers of databases and online search services, and libraries and virtual library organizations in their multiple roles as consumers, publishers, and providers of online services.

**Conclusion**

The consortial virtual library today is much more than an organized subject directory to web resources. The virtual library provides materials and services in support of a number of traditional library functions, including bibliographic access, provision of digital and non-digital content, resource sharing, reference, and the collection of meaningful statistics. Perhaps because the virtual library is by definition a cooperative effort, in each of these areas we are seeing a lot of community energy directed into the development of technologies, software tools, norms, and standards to support these activities. This is a very healthy sign.
**Circulation Interchange Protocol Now-In-Draft**

Contributed by Pat Stevens, OCLC

The Circulation Interchange Protocol Committee recently completed a Draft Standard for Trial Use and posted it to the NISO website in January. Two revisions have been posted since that time. A third revision is expected in early August. The DSFTU has two components: a protocol document that describes the content of services and a Cross-Application Profile that provides details necessary for implementation including specifications for encoding and transport. It is XML encoded and the cross-application profile includes an XML DTD.

Work continues on four application profiles: Self-Service, Circulation with Interlibrary Loan Exchange, Direct Consortial Borrowing, and Remote User Authentication. At the meeting in May in Sheffield, England, the committee agreed on a template for expressing interchange models that could be used by the application profile groups to describe alternative implementations.

Frances McNamara of the University of Chicago is serving as the NCIP Implementation Coordinator. McNamara is monitoring expressed interest in implementation, evaluating progress and determining what additional support is required to encourage use of the standard.

The committee will meet next in September 5-8, 2001 in Winchester, VA. The goal is to review application profiles so that they can be readied for formal Draft Status in October.

**Dublin Core Approved**

The Dublin Core Metadata Set (Z39.85), a basic set of metadata for resource discovery will be advanced to ANSI for approval as an American National Standard. ANSI approval should be confirmed by the end of September. The final result of the ballot and review of Z39.85-200x (Dublin Core Metadata Element Set) was:

- 41 - Yes/ Approvals
- 5 - No
- 0 - Abstain

The initial ballot resulted in two unresolved "no" votes. The Reconsideration Ballot conducted February 2- March 5, 2001 resulted in three NISO members (the International DOI Foundation, Medical Library Association, ARLIS/NA) changing their votes from approval to no.

The final ballot results meet the criteria for NISO approval (approval by more than one-half of the NISO consensus body and at least two-thirds of those voting). With the support of the NISO Board of Directors, NISO will submit Z39.85 to ANSI for approval by the ANSI Board of Standards Review as an American National Standard. The Board believes that the widespread support for Dublin Core within the NISO community and the demonstrated utility of this metadata scheme for certain types of applications warrant the approval of this standard. The negative voters have been informed of their right to appeal this decision, but no appeals were filed.

**OpenURL Launched**

Contributed by Eric F. Van de Velde, California Institute of Technology, Chair of NISO SC AX

The OpenURL Standard Committee (SC AX) met for the first time on June 28th and 29th at CNRI headquarters in Reston, VA. While the main goal of this meeting was to adopt a work plan, the committee also made progress in identifying basic terminology and agreed to the broad outlines of the initial scope of the standard.

Three committee members opened the meeting with presentations. Cliff Morgan, the NISO Standards Development Committee liaison and Publishing Technologies Director at John Wiley & Sons Ltd, explained how NISO committees are formed and how standards are adopted. He discussed the relationship between NISO and other national and international standardization bodies. Oren Beit-Arie, the Vice President for Research and Development at Ex Libris (USA) Inc., introduced the proposal that instigated the development of the standard. Herbert Van de Sompel, who announced that he just accepted the position of Director of e-Strategy and Programmes at the British Library, presented the Bison-Futé model (named after the French road map used by savvy car tourists in France). This is a general and abstract model of open linking, which he used to frame some of the thorniest issues the committee is facing, including the initial scope of the OpenURL standard.

Following the presentations, each committee member submitted issues that need to be addressed during development of the standard. The committee prepared two lists: one for technical issues and one for data gathering and public relations issues. These lists were divided into seven areas, with each area assigned to a work group: Scope; Relationship to Other Standards; Syntax, Encoding, and Semantics; Terminology (whole committee); Technical Review Committee; Public Relations; Data Gathering. The work group chairs will prepare a work plan for their respective work groups. The committee then turned its focus to several core technical issues including terminology and scoping.

The committee acknowledged the need to identify a core set of terms early in the standardization process and to encourage adoption of these terms by authors and journals.
Through a variety of activities. Our most notable activities and advancement of the information community industry resource.

Diversity of organizations that find NFAIS to be a valuable membership directory also includes such organizations as the Getty Research Institute, Ebsco Publishing, Fachinformationszentrum Karlsruhe, demonstrating the like NISO, the Federation dedicates itself to the enhancement and development of the information community and its own very active Standards Committee that monitors a wide variety of standards groups including the International Standards Organization, the World Wide Web Consortium, and the Book Industry Study Group as well as NISO.

NFAIS membership has been closely aligned with such NISO concerns as Z39.50, the Dublin Core, Open E-Book and similar initiatives. The expertise of our members in such areas as controlled vocabularies, thesauri, metadata and reference linking makes them appropriate participants in a variety of initiatives and standards activities that will affect the future of digital information resources.

Perhaps most revealing is the dramatic overlap between NFAIS membership and the membership of NISO. While the central focus of NFAIS is on the business of information dissemination, the stated NISO goal of "using technical standards in information services, libraries, and publishing...to achieve compatibility and therefore interoperability between equipment, data, practices, and procedures" is a goal for most of the organizations making up NFAIS.

In today's world of networked systems and databases, users want to be able to share information and retrieve information reliably. Content providers have an obligation to design and implement systems that will integrate a wide variety of information resources, whether GIS spatial data sets or text-based research findings. The retrieval mechanisms used must be able to accommodate both expert and

The committee will meet again on January 24-25, 2002 and will prepare the first reviewable draft of the standard. The committee hopes to adopt the Draft OpenURL Standard at its third meeting, planned for May 30th and 31st. By any measure, this is an ambitious schedule. However, after seeing how much the group accomplished in one meeting, all committee members were confident in their ability to finish the work on schedule. In fact, the committee unanimously declared OpenURL our weapon of choice!

For complete details on the Committee's work, please refer to the OpenURL committee's website at http://library.caltech.edu/openurl. There, you will find the committee agenda, the minutes, work plan, presentations, and other documents (or links to them). You will also find instructions on how to subscribe to the OpenURL listserv to enable you to join the on-line discussion and receive information about the standard as it develops.

**MEMBER SPOTLIGHT**

**NFAIS and NISO, Sharing the Road Forward**

*By Jill O'Neill, Director, Planning & Communications, NFAIS*

NFAIS, the National Federation of Abstracting and Information Services, is made up of organizations from both the public and private sector who are content producers and aggregators for information-intensive research communities and professions. Our member organizations serve highly-specialized communities of users by enhancing access to and retrieval of high-value information and data across all fields of research and scholarship.

A 1958 press release announcing the formation of the Federation listed as members such key information providers as the U.S. Department of Agriculture, the U.S. National Library of Medicine, Biological Abstracts (now BIOSIS), the American Psychological Association and the American Chemical Society. All of these organizations remain NFAIS members to this day, but the 2001-2002 membership directory also includes such organizations as the Getty Research Institute, Ebsco Publishing, the American Theological Library Association and the Fachinformationszentrum Karlsruhe, demonstrating the diversity of organizations that find NFAIS to be a valuable industry resource.

Like NISO, the Federation dedicates itself to the enhancement and advancement of the information community through a variety of activities. Our most notable activities include sponsoring timely and topical conferences and seminars. NFAIS has a long tradition of encouraging dialogue across the various sectors of the information community and cherishes its reputation for providing forums where concerns may be discussed from a variety of perspectives. It sponsors its own very active Standards Committee that monitors a wide variety of standards groups including the International Standards Organization, the World Wide Web Consortium, and the Book Industry Study Group as well as NISO.

Time did not permit the group to have a comprehensive discussion on all terms needed. However, the committee reached quick preliminary consensus on the names of eight terms. For example, the committee adopted the name "referent" for the entity that is referenced. Previously, this was also called "subject", "object", or "referenced entity". The minutes of the meeting contain the complete list of proposed terms. In the near future, the OpenURL website will feature an official glossary.

Framed by the Bison-Futé model the committee reached consensus on limiting the scope of the current OpenURL to one referent, one resolver, and one referrer. In addition, it was agreed that we must design an evolving standard that has the ability to transition smoothly from one version to the next. The Syntax, Encoding, and Semantics Work Group will develop a versioning mechanism. The Bison-Futé model is the subject of a paper by two SC AX members, Herbert Van de Sompel and Oren Beit-Arie, published in the July 2001 D-Lib (http://www.dlib.org/dlib/july01/vandesompel/07vandesompel.html).
inexpert information seeking behaviors and should retrieve all relevant items whether or not the user is aware that such items exist. The smart designers of digital archival systems will ultimately recognize the value derived from the inclusion of indexing tools and services as a core element of any successful information resource. Commonly adopted standards are central to providing these types of sophisticated and fully integrated information resources.

One NFAIS member, the Defense Technical Information Center (DTIC), serves as the central focal point in the Department of Defense (DOD) for the comment, coordination, and dissemination of standards from NISO and the Defense Information Systems Agency. Mr. Kurt Molholm, DTIC Administrator, is currently chairing the committee for the revision of the technical reports standard for NISO. By promoting the use of information content and technology standards in the DOD, DTIC can help promote electronic data interchange (EDI) and system interoperability.

Another NFAIS member, Access Innovations, Inc's president, Marjorie Hlava puts it this way, "We need to have reliable formats so that people can share information across files and at different distributors. We have cataloging formatting standards to ensure that libraries can share information. We have SGML, a standard embraced by many publishers for their electronic content. We are moving towards XML very rapidly. All of these are standards which will change the face of our industry. We need to keep a careful and active eye on them in order to know and help shape our destiny."

Given the importance of NISO standards activities to ongoing business activities of the NFAIS membership, NFAIS is pleased to announce that NISO and NFAIS will be co-sponsoring a workshop on February 24, 2002 in conjunction with the NFAIS Annual Conference in Philadelphia. The workshop is intended to provide members with an opportunity to discuss and influence future directions for editorial, linking and archiving standards. It is a follow-up to an earlier workshop that the two organizations sponsored in 2000.

Additional information regarding NFAIS, its activities and membership is available at the NFAIS website (www.nfais.org).

IN MEMORIAM

Nancy Knight

Over the last three years many of you have shared with me the pleasure of getting to know Nancy Knight. Nancy worked closely with me and Jane Thomson to build NISO's membership and programs. Nancy's death on May 21, culminating a two year battle with multiple myeloma, was a terrific loss.

Nancy was an extraordinary woman who left a deep impression on all the persons she encountered. Without a doubt she had the most positive outlook of anyone I have known, coupled with a smile that she readily shared. The energy and enthusiasm she brought to all aspects of work and play, the generosity in her friendship, and her remarkable persistence made a fundamental difference.

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Nancy was a graduate of Simmons College and earned the M.S.L.S. from the University of Chicago. Her career in the library and information world spanned thirty years. In that time she worked for the American Library Association, Georgetown University Libraries, the American Psychological Association, and SilverPlatter. Nancy is survived by her husband George, their children Jessica and Sherman, and a granddaughter, Cecilia Nancy, who is already showing all signs that she is endowed with Nancy's positive energy.

When Nancy joined the NISO staff in 1998 I felt fortunate that NISO could attract someone of her intelligence and spirit. I still feel that way today.

The family has asked that memorial gifts be sent to the International Myeloma Foundation, 12650 Riverside Drive, Suite 206, North Hollywood, CA 91607.

Pat Harris
NISO, Executive Director

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Beverly P. Lynch, Chair; Patricia Harris, Executive Director. Opinions expressed in signed articles and columns are those of the writers and do not necessarily represent the opinions of NISO or the staff of Information Standards Quarterly. Editorial contributions, articles, news releases, and letters should be sent to NISO headquarters. ISQ is sent free of charge to members of NISO. Nonmembers may subscribe for $80 per year U.S., $120 international. Subscription requests, requests for back issues, and change of address forms should be sent to NISO, P.O. Box 451, Annapolis Junction, MD 20701-0451, tel: 301-362-6904, fax: 301-206-9789, toll-free 877-736-6476. Copyright © 2001 National Information Standards Organization. All materials in this publication subject to copyright by the National Information Standards Organization may be photocopied for the noncommercial purpose of scientific or educational advancement granted by Sections 107 and 108 of the Copyright Revision Act of 1976. For other reprinting, photocopying, or translating, address requests to the National Information Standards Organization.
NISO Receives ICAES Award

The International Coalition of Access Engineers and Specialists (ICAES), the leading industry group promoting the development of technology accessible to all, has awarded the 2001 ICAES' Collaboration and Coordination Award to NISO, the DAISY consortium, and the Open Ebook Forum. This award recognizes national, international or industry efforts to prevent, resolve, or address compatibility and interoperability.

This award singles out NISO's work in developing file specifications for Digital Talking Books and e-Books. This work is being carried out by NISO Standards Committee AQ, chaired by Michael Moodie (Library of Congress).

The award announcement reads: "New generation digital talking books based on the open standards being developed by the Daisy Consortium and NISO provide significant advances in usability and functionality for persons with print impairments. The Open eBook specification, a base format for mainstream electronic books, incorporates features to promote accessibility. Members of the Daisy and NISO efforts are working hand in hand with members of the Open eBook Forum to build a future where the world of electronic books will be open to all."

netLibrary Joins NISO

NISO welcomes netLibrary to Voting Membership!

netLibrary (http://www.netLibrary.com) is a leading provider of eBooks and Internet-based content management services. Hundreds of publishers of academic, professional, reference, and scholarly books have adopted netLibrary's digital rights management infrastructure. The organization develops, archives, hosts, and securely distributes eBooks and print-ready files through a variety of channels, including academic, corporate, public, and school libraries. netLibrary eBooks are full-text searchable and available for use on personal computers in online and offline formats. Justin Littman, Software Engineer, Research & Technology Strategy and Henry Vellandi, Chief Scientist are the designated Voting Representative and Alternate respectively.

NISO Election Results

Results of the NISO Board elections have been tabulated. NISO is pleased to welcome to the Board of Directors: Jan Peterson elected to the office of Vice-chair/Chair-elect; Pieter Boiman, Jose-Marie Griffiths and Sally McCallum, all elected to the office of Director. Congratulations to NISO's newly elected leaders. Their terms on the Board began July 1, 2001.

E-Book 2001

E-Book 2001, sponsored by NISO and NIST, will be held November 5-7, 2001 in Washington, DC at the Ronald Reagan Center. Program sessions and Exhibits will build on the theme "Applications, Authors, and Accessibility."

E-Book 2001 is expected to attract more than 900 persons from the publishing and information industries, the high-tech arena that supports the e-book market, all segments of the library marketplace, and the educational community. Exhibitor information can be found on the NISO website at: http://www.niso.org/Ebook-01.html.


New NISO Press Title on Metadata

NISO Press has published Metadata Made Simpler a 12-page introduction to metadata. Authored by Gail Hodge, this booklet explains in user-friendly language the value of metadata and reviews the principal metadata schemes in use today in the bibliographic world. A list of resources on the Web, including metadata crosswalks and tools for metadata creation are included. A brief glossary lists the basic metadata vocabulary. Metadata Made Simpler is available from NISO Press Fulfillment for $20 or can be downloaded as a pdf file from the NISO website.

NISO's NetRef Workshop Report Available

The NISO workshop to explore standards needed to support interoperable networked reference services was held April 25-26 in Washington, DC. Over 30 persons attended, representing a broad spectrum of practitioners, researchers and software developers in the U.S., Canada, and Europe. The group identified four areas for possible work:

- An interchange standard to manage the transactions associated with web-based question and answer programs (question and answer processing transaction protocols)
- "Knowledge" database recommendations/standards for question and answer metadata sets
- Institutional metadata elements sets
- Search attribute sets

The report, available at http://www.niso.org/netref-report.html, includes summaries of and links to nine presentations given in open session and three discussion group sessions on protocol issues, knowledge base issues and profiling issues. In conclusion, the group identified stakeholders who should be involved in next steps, existing models that may help in developing appropriate
standards, and a group of interlinked standards that might be developed.

**World Standards Day Paper Competition**

Standards and the Environment is the theme for the 2001 World Standards Day paper competition sponsored by the Standards Engineering Society. Any U.S.-based organization or individual is invited to submit a paper. For details on how to approach the topic and how to enter visit the SES website: [http://www.ses-standards.org](http://www.ses-standards.org).

**UK Statistics Forum Held**

JISC, the UK-based Joint Information Systems Committee and the UK’s Publishers’ Association have formed a working group to develop a code of practice for vendor based electronic journal and databases usage statistics. A one-day invitational forum was held June 22, 2001 in London to review preliminary work and begin to plot a strategy for moving forward. Approximately 50 people representing a variety of primary publishers, aggregators, academic libraries and related information services organizations attended. Marilyn Geller attended on behalf of NISO.

Richard Gedye (Oxford University Press), chair of the working group, opened the session by identifying the benefits of gathering online usage statistics for libraries, vendors and publishers. The long term goal, Gedye explained, is to establish a complete code of practice; the goal for the one day forum was to move quickly towards that end by determining a list of fields with definitions and output formats and a list of next steps.

The day’s work was based on the vendor based Usage Statistics Collection ([http://www.jisc.ac.uk/curriss/collab/c6_pub/uswg/index.html](http://www.jisc.ac.uk/curriss/collab/c6_pub/uswg/index.html)) and Definitions ([http://www.jisc.ac.uk/curriss/collab/c6_pub/uswg/definitions.html](http://www.jisc.ac.uk/curriss/collab/c6_pub/uswg/definitions.html)). All elements listed in the collection document are rated with one to four stars, one representing basic information that must be collected. One of the tasks for the day was to examine all one-star elements and determine if they should remain one-star and to identify other elements that should be mandatory. Several outstanding issues were identified, categorized and assigned for researching and reporting back:

- Gateways
- Sessions and Searching
- Authentication, proxy servers, data protection
- Institutional granularity / Market elements and Types of reports
- Taxonomy including definitions, Onix, XML DTDs,
- Data processing

### NISO Programs at SLA and ALA

**Special Libraries Association Annual Conference, San Antonio**

On Tuesday, June 12, 2001, the SLA Standards Roundtable meeting proved to be the consistently lively meeting place for standards developers, standards aggregators, and standards users. Later that day, the SLA Standards Update meeting, sponsored by the SLA Standards Committee, was chaired by Margie Hlava. This session featured presentations by Cynthia Whitacre (OCLC), Dorothy McGarry, and Pat Harris (NISO).

**American Library Association, San Francisco**

During the ALA 2001 Annual Conference, NISO and BASIC, the Book and Serial Industry Communications, sponsored a panel on the challenges of integrating electronic journals into library collections and the standards now in development that will enable publishers and librarians to deliver better access and more information about these resources.

Debbie Loeding, VP Sales & Marketing for the H.W. Wilson Company, set the stage by introducing the challenges and opportunities that electronic journals bring by allowing us to connect content and a wealth of supporting information about that content. Brian Green, Managing Agent BIC/EDITEUR (Book Industry Communication) reported on metadata developments focusing on Onix for e-journals. Eric Van de Velde, Director of Library Information Technology, California Institute of Technology and Chair of NISO’s OpenURL Standards Committee explained the thinking behind the OpenURL and his vision of the standards work to be done. These presentations are available on the NISO website at [http://www.niso.org/Ejournal-web.html](http://www.niso.org/Ejournal-web.html).

Also during ALA, AVIAC, the Automation Vendor group, met. On the agenda for this meeting were updates on the ISBN, the ISTC, the Circulation Protocol, OpenURL, and Z39.50 developments.

### Meeting Calendar

For additional information on any of the events listed contact the NISO office at nisohq@niso.org

**JULY 2001**

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<th>Event</th>
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<td>July 9</td>
<td>Standards Development Committee</td>
<td>New York, NY</td>
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**International Update**

**Functional Requirements for Identifiers and Descriptors Released**

SC9 of TC46, the subcommittee that develops and maintains ISO standards on the presentation, identification and description of documents has issued a proposed technical report on defining the "Functional Requirements for Identifiers and Descriptors for Use in the Music, Film, Video, Sound Recording, and Publishing Industries" (ISO PDTR 21449). The report, authored by Tom Delsey (also the author of FRBR), describes:

- a conceptual business architecture,
- an information architecture,
- the attributes and relationships to support the information architecture, and
- a generic set of user transactions that are mapped to the defined attributes and relationships.

ISO technical reports undergo the same ballot process as a standard. All NISO Members are invited to review this document and submit comments that will be considered in forming the U.S. response to the report. Comments on PDTR 21499 should be sent to nisohq@niso.org by August 31, 2001.

Background information about PDTR 21449 and a link to the report in PDF are available on the ISO/TC46/SC9 website at: http://www.nlc-bnc.ca/iso/tc46sc9/21449.htm.

**TC 46 Developments**

On May 2 and 3, 2001, Sally McCallum (Library of Congress) and Pat Harris (NISO) participated in a planning session with other TC 46 leaders to consider the future of the Technical Committee. A small group convened by the new TC 46 secretariat drafted the core components of a business plan and a new structure to support the goals articulated in the Plan. The TC 46 Secretariat will distribute the Plan and the proposed structure for ballot to the 30-Participating members of TC 46. A plenary meeting of the TC will be held October 18-19,2001 to launch the reconstituted Technical Committee. It was decided that Plenary meetings of the TC will be held every 18 months. The U.S. will host the plenary meeting to be held in May 2003.

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**Standards Status: July 1, 2001**

This is a capsule report on each active NISO Standards Committee or standard-in-development. This list does not include current, approved standards not being revised. To learn more about each activity go to: http://www.niso.org/standard.html

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<td>National Z39.50 Profile for Library Applications</td>
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<td>OpenURL</td>
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**August 2001**

- August 31-Sept. 1  TC46 SC8 WG 2, Library Statistics  Paris

**September 2001**

- September 5-8  SC AT - NCIP Committee  Winchester, VA
- September 20  NISO Board of Directors  Washington, DC

**October 2001**

- October 8-14  Frankfurt Book Fair
- October 10  World Standards Day
- October 18-19  TC 46 Plenary Meeting  Paris

**November 2001**

- November 5-7  E-Book 2001  Washington, DC
Z39.84-2000 Syntax for the Digital Object Identifier
Defines the order and components of the Digital Object Identifier (DOI) the first identification system for intellectual property in the digital environment. The DOI provides a way to identify content in all media, plus link users to rights holders to facilitate e-commerce transactions.

Metadata Made Simpler (By Gail Hodge)
This basic introduction to metadata explains what metadata is about, why it is needed, and the powerful advantages that good metadata offers. The leading metadata sets (Dublin Core, GILS, ONIX, VRA, EAD, and TEI) are described and the principles of metadata creation and mapping are covered. A list of Web resources and a glossary are also included.

Z39.78-2000 Library Binding
Binding is the first line of defense in library preservation and can be a major part of a library's preservation budget. Developed jointly by NISO and the Library Binding Institute, this ANSI/NISO/LBI standard describes the technical specifications and materials to use for first-time hardcover binding of serials and paperbound books intended for the rigors of library use. It also covers rebinding of hardcover books and serials. Following this standard will give you volumes that are sturdy, durable and flexible.

Z39.82-2001 Title Pages for Conference Publications
Describes the kinds of information that publishers, authors, and editors should use to create title pages for conference publications so research results can be easily found and shared. This can be used to describe conference proceedings or publications in all languages and all formats (electronic and hard copy).

Z39.77-2001 Guidelines for Information About Preservation Products
Details the information to feature in catalogs and promotional literature describing products used to store, bind, or repair library materials. This information applies to the full items library's buy including books, pamphlets, sound recordings, videos, films, CDs, manuscripts, maps, and photographs.

Z39.79-2001 Environmental Conditions for Exhibiting Library and Archival Materials
Explains how to exhibit and display library and archival items—books, manuscripts, photos, and pamphlets—to minimize the wear and tear on the item. Temperature, humidity, light, contaminants are discussed. Details on exhibition case design and construction are given and specific materials that are safe to use are noted.

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