NISO Final Report

Technological Tools and Incubation Grant

June 2007 – February 2009

submitted to

The Andrew W. Mellon Foundation

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In June of 2007, The Andrew W. Mellon Foundation generously awarded the National Information Standards Organization (NISO) a $196,000 grant under its Scholarly Communications Program. The award was to be used for two main areas. First, the grant would assist in the transformation and invigoration of the standards process by supporting the adoption of technology tools for collaboration, and the necessary customization of those tools to suit NISO’s best practices in standards development. The second aspect of the grant would allow NISO to incubate new community initiatives by developing a series of Thought Leader meetings.

In 2005, the Mellon Foundation supported a Blue Ribbon Panel to guide decision making as part of NISO’s strategic planning effort. The Panel articulated the need that the scholarly information community had for robust standards, and suggested guidelines and new tools that would help NISO keep up with the speed of change in technology. Further, the Panel highlighted the importance for NISO to pursue a model of community involvement in standards development. This latest grant from Mellon provided NISO with the funds needed to create the necessary infrastructure and spur forward the approach required to support this model.

As noted above, the 2007 grant focused on two areas of development to help NISO implement the recommendations of the Blue Ribbon Panel. For the first area—the application of software and technology tools to assist in standards development—NISO thoroughly analyzed its procedures, including a survey of past and current committee chairs, to develop and document best practices for standards development. Following that work, NISO has implemented a web-based software suite of coordination tools provided by Kavi Corporation—software that is specifically designed for the development of standards following NISO’s procedures and the best practices for working groups, and which provides the groups with collaborative resources for their development tasks. These tools allow NISO to better manage its committees, enable the technical exchange of ideas, and provide document management and commenting. The system also provides a robust balloting system through which NISO can remain in strict compliance with its own and ANSI’s development procedures. The system allows for improved communication so that each working group can more effectively address issues, manage work, and release a standards solution for rapid and broad implementation. The system has greatly reduced the administrative overhead time and costs associated with managing these processes.

The second aspect of the grant, the organization of four Thought Leader meetings, has pulled together some of the scholarly information community’s foremost specialists to focus on key areas where new standards or initiatives might provide a solution to a particular pain point. Joining together in an in-person meeting, the thought leaders discussed problem areas and gaps, brainstormed potential standards or best practice solutions, and recommended to NISO’s Architecture and Topic Committees those solutions which they felt the NISO community should pursue. By bringing together specialists at an early stage, NISO is able to proactively engage the community and identify areas for development where standards or recommended practices can make the greatest impact and can engage a broad number of players. The four Thought Leader meetings topics supported by this grant were: Institutional Repositories; Digital Libraries and Collections; E-Learning and Course Management Systems; and Research Data. Using the revised NISO Framework and its decision criteria, the Architecture Committee will review the
recommendations given in the meeting reports to determine how to cohesively and effectively take next steps. The Committee will then advance the top priority recommendations to the Topic Committees who will determine how to move forward, commonly through the formation of technical working groups.
Thought Leader Meetings

Background

Throughout NISO’s history, establishment of projects to develop a new standard or best practice has been a reactive process. An organization or individual would identify a problem and then send a proposal to NISO for action, or a group that had already developed a specification would come to NISO for its adoption as a national standard. A Blue Ribbon panel convened as part of NISO’s strategic planning in 2005 highlighted this fact, saying that, “NISO’s role and decision making [in choosing which projects to adopt] has been far too reactive and opportunistic.” Furthermore, within the broader context of the strategic Architectural Framework, which was developed in 2006, the report concluded that, “it should become easier to strategically plan and structure these pre-standards activities.”

As an outcome of the strategic planning, a new proactive process of Thought Leader Meetings was envisioned where experts from diverse backgrounds would be brought together to discuss a particular topic area and identify problems or gaps where a standard or recommended practice solution would be of benefit.

The recommendations from the meetings would be reviewed and evaluated by one or more of NISO’s Topic or Architecture Committees. The feasible recommendations would be prioritized and turned into actionable new work items for NISO to pursue.

Meeting Preparation

The topics for the first four meetings, held in 2008, were chosen following discussions with the NISO Board of Directors and the Program Director at the Melon Foundation. Two of the topics—institutional repositories and digital libraries and collections—are areas where NISO is already actively engaged. Two of the topics—research data and e-learning and course management systems—are areas where NISO has not historically been involved, but that are becoming inter-related with NISO’s interest areas and are having similar issues as those that digital libraries and institutional repositories are experiencing.

Each of NISO’s three Topic Committees and the Architecture Committee were assigned to one of the four meetings to coordinate. NISO identified consultants with experience and engagement in the respective topic to work with the committees in order to research and identify relevant experts, develop the agenda, and invite the experts. The consultants were responsible for soliciting participation, facilitating the meeting, compiling feedback, and issuing the final report.

In selecting the meeting participants, great care was taken to ensure that there was balanced representation from affected stakeholders. Experts came from academia, government, libraries, publishers, content aggregators and distributors, information system vendors, policy agencies, non-profit organizations, and independent consultancies. Each was chosen for their knowledge and expertise in the relevant field and the variety of opinions and backgrounds that they would bring to the discussion. As will happen when coordinating any meetings of this sort, not all of the invited participants could join the meeting, although dates were set with the goal of bringing the
most diverse and senior representatives possible. While aiming to be as inclusive as possible, it was recognized that these groups would be representative, but not comprehensive.

Although meeting participation was by invitation only, the meetings were publicized to the NISO community and input on issues related to each meeting topic was encouraged. Additionally, many of the experts solicited input prior to the meeting from their colleagues or customers. Several of the facilitators held pre-meeting conference calls and used interactive web tools to engage the participants, set the stage, and begin brainstorming the issues.

All of the meetings were held in the NISO office in Baltimore, Maryland.

**Institutional Repositories Thought Leader Meeting**

**Date Held:** February 12, 2008  
**Facilitator:** Greg Tanenbaum (Consultant)  
**Responsible Topic Committee:** Discovery to Delivery  
**Final Report:** See Appendix B (submitted in a separate file)  
**Publicly Available from:** [www.niso.org/topics/tl/NISOIRreport.pdf](http://www.niso.org/topics/tl/NISOIRreport.pdf)

**Participants:** Charles W. Bailey, Jr. (Publisher, Digital Scholarship), Catherine Candee (Executive Director, Strategic Publishing & Broadcast Services, UCOP, California Digital Library), Sayeed Choudhury (Associate Director for Library Digital Programs, Johns Hopkins), Paul Curran (Vice Chancellor Bournemouth University), Teresa Ehling (Director, Center for Innovative Publishing, Cornell), James Hilton (CIO and Professor of Psychology, University of Virginia), Michele Kimpton (Executive Director, DSpace Federation), Larry Lannom (Director, Information Management Technology, Corporation for National Research Initiatives), and Rob Tansley (Software Engineer, Google).

**Description:** With significant recent institutional investments in implementing repository software, interoperability is a critical success factor. This is particularly true where the lack of interoperability hinders the use of these systems on the deposit side by the content creators. The struggle between local repository needs and the more global needs for sharing, such as through cross-repository searching, continues to be a topic of discussion and heated debate, and could benefit from involvement of not only the producers of institutional repository software, but from the existing standards bodies that currently work in this space. Many issues related to data models and metadata schemas exist, including the huge problem of common encoding schemes for values within those schemas.

The full report of the meeting is included as Appendix B. It is also publicly available on the NISO website for download (URL listed above.) For a summary of the recommendations and preliminary next step action items, see Appendix A.
Digital Libraries and Collections Thought Leader Meeting

Date Held: June 17, 2008  
Facilitator: Judy Luther (Informed Strategies)  
Responsible Topic Committee: Content & Collection Management  
Final Report: See Appendix C (submitted in a separate file)  
Publicly available from: http://www.niso.org/topics/tl/NISODLDCreport.pdf

Participants: Oren Beit-Arie (Chief Strategy Officer, ExLibris), Peter Brantley (Executive Director, DLF), Adam Chandler (Coordinator Serv Design, Digital Technology, Cornell), Mary Chute (Deputy Director for Libraries, IMLS), Rachel Frick (Senior Program Officer, IMLS), Michael Healy (Executive Director, BISG), Tim Jewell (Director Information Resources, Collections, Scholarly Communications, University of Washington), Jim Michalko (President RLG, OCLC), Amy Miller (Digital VP Ingram Digital, Ingram), John Ockerbloom (IT Sr. Project Manager, University of Pennsylvania), Evan Owens (Chief Technology Officer, Portico), Kishor Patel (CSA President, ProQuest), Howard Ratner (Chief Technology Officer, Nature), Patricia Renfro (Digital Programs & Services, Columbia University), John Shaw (Assistant Managing Editor, Sage), Michael Stoller (Director of Collections & Research Services, New York University), John Unsworth (Dean of Grad School Library & Information Sciences, University of Illinois Urbana Champaign), Alex Wade (Sr. Program Manager, Scholarly Communication, Microsoft), and Lee Zia (NSDL Lead Program Director, NSF).

Description: Resource management systems that facilitate the delivery of electronic library resources are in their early formative stages. Some experts expect these systems to become the central management tool for all processes and services within libraries, moving the traditional library system to a secondary role. How they coordinate information exchange among publisher and library systems will be important to improving library staff productivity and will be critical to the library's delivery of content to the end user. Much of what will run these systems will entail publisher and library systems interacting on an ongoing machine-to-machine basis. Very valuable work could be done, for example, to document different system requirements in these areas as a basis for discussions of places where proprietary interests may be superseded by standardization needs.

The full report of the meeting is included as Appendix C. It is also publicly available on the NISO website for download (URL listed above.) For a summary of the recommendations and preliminary next step action items, see Appendix A.
E-Learning and Course Management Systems Thought Leader Meeting

Date Held: July 16, 2008  
Facilitator: October Ivins (Consultant)  
Responsible Committee: Architecture  
Final Report: See Appendix D (submitted in a separate file)  
Publicly available from: www.niso.org/topics/tl/NISOTLElearn.pdf

Participants: Rob Abel (Executive Director, IMS Global Learning Consortium), Bryan Alexander (Director of Research, NITLE), Tracey Armstrong (President and CEO, Copyright Clearance Center), Roddy Austin (Director of IT and Media Services, NYU Libraries), Mark E. Belles (VP, Business Development, Blackboard, Inc.), Julian Clayton (VP Training and Educational Systems, John Wiley and Sons), John Harwood (Sr. Director, Teaching and Learning with Technology, Penn State), John L. King (Vice Provost for Academic Information, University of Michigan and SAKAI), Kendrick H. McLish (Vice President, Product and Marketing, eCollege), Ed Moura (Executive Vice President, Digital Solutions Group, Cengage Learning), Brandon Muramatsu (Director, Center for Open and Sustainable Learning, Utah State and OCW), Jared Oates (User Services Director, Sirsi/Dynix), Robby Robson (Founder and President, EduWorks), Patricia Sabosik (Sr. Director, New Product Development, Gartner Research), Joel Thierstein (Associate Provost, Innovative Scholarly Communications, Connexions and Rice University), and Beth Forrest Warner (Asst. Vice Provost, Information Services, University of Kansas).

Description: Electronic learning and course management systems interact in a variety of ways with library and publisher systems to deliver educational resources to the learning community. How content is delivered to students within these systems, interoperability issues, and automated license expression interactions will be key to broad adoption of e-learning systems. Large commercial entities in this space, as well as open source efforts (for instance, MIT’s OpenCourseWare, Moodle, etc.) are building systems and driving many of the standards in an ad hoc manner. Partnerships with other organizations such as IMS Global Learning Consortium will be key to involving all the relevant stakeholders.

The full report of the meeting is included as Appendix D. It is also publicly available on the NISO website for download (URL listed above.) For a summary of the recommendations and preliminary next step action items, see Appendix A.
Research Data Thought Leader Meeting

Date Held: October 1, 2008
Facilitator: Maureen C. Kelly (Consultant)
Responsible Topic Committee: Business Information
Final Report: See Appendix E (submitted in a separate file)
Publicly available from: www.niso.org/topics/tl/NISOResData.pdf

Participants: Jean Claude Bradley (Chemist, Drexel University), Lars Bromley (Project Director, AAAS), Camelia Csora (Product Manager, 2collab), Matthew J. Dovey (JISC), Ellen Kraffmiller (Substituting for Merce Crosas, Director, Dataverse Network), Clifford Lynch (Executive Director, Coalition for Networked Information), John Sack (HighWire Press), MacKenzie Smith (Associate Director for Technology, MIT Libraries – DSpace), Robert Tansley (Software Engineer, Google), Paul Uhlir (National Academy of Sciences), and Stuart Weibel (Senior Research Scientist, OCLC).

Description: Management of research data is a rapidly growing issue not only in government agencies such as NASA, NOAA, and NIH, but also in the biotechnology industry and in the academic environment, where struggles to establish standards for storing and sharing data continue to hinder collaboration and reuse of existing data sets without large investments of time and money. A gathering of key stakeholders from a broad cross-section of government, corporate, and academic organizations will ensure collaborative solutions to mutual problems and might even be able to generate funding from various corporate bodies if the topics discussed are oriented toward their needs.

The full report of the meeting is included as Appendix E. It is also publicly available on the NISO website for download (URL listed above.) For a summary of the recommendations and preliminary next step action items, see Appendix A.

Key Learnings

A theme that arose throughout each of the Thought Leader meetings was NISO’s limited historical engagement in some of the areas discussed, the organization’s scarce resources, and that NISO has not been in a position to enforce adherence or adoption of our work in the community. Any standards work that is undertaken as a result of these meetings would therefore need to provide a compelling value proposition to ensure widespread adoption.

In addition, it will be essential that NISO engage diverse partners at the outset who will support the outcome and help promote adoption. NISO can leverage existing relationships with organizations like the Coalition for Networked Information (CNI), the Book Industry Study Group (BISG), the Council on Library Resources (CLIR), the Joint Information Systems Committee (JISC), EDItEUR, and the UK Serials Group (UKSG). These organizations have long and successful track records of developing projects in their own specific domains. NISO has begun reaching out to the leadership of these organizations in hopes of developing partnerships that can achieve the scale necessary to succeed in the adoption of any initiatives that will be pursued. NISO is also exploring new relationships with organizations where relationships did not previously exist, such as with the International Digital Publishing Forum (IDPF), EDUCAUSE,
the Joint Information Systems Committee (JISC) in the UK, IMS Global Learning Consortium, OASIS, and the W3C Semantic Web committee.

Another clear outcome is the need to be strategic in determining which projects to undertake. The meetings developed a wide range of potential projects, each with some potential value. However, it will be critical to review and evaluate these proposed projects both at a strategic level—regarding their fit within NISO’s Framework and priorities—as well as at the tactical level—regarding the feasibility of achieving a usable outcome within a reasonable timeframe. NISO’s plans for updating and utilizing the Framework to support these decisions are discussed in more detail in the next section of this report.

Managing the Meeting Outcomes

When each Thought Leader meeting was originally assigned to a specific NISO committee for planning and coordination, the intent was to have that same committee do the follow-up evaluation and filter the recommendations into prioritized actionable work items. However, after seeing the breadth and depth of the discussions that took place and the inter-relationships of recommendations across topics, a different approach was taken. It was decided that the meeting recommendations would first be reviewed by NISO’s Architecture Committee, which provides the overarching strategic planning and coordination for the organization. This committee was tasked with organizing and synthesizing the recommendations from all four meetings, prioritizing and positioning the recommendations within NISO’s strategic Framework, and effectively handing off the follow-up actions to the relevant Topic Committee. This approach supports the common meeting theme that NISO needs to be more strategic in determining which projects to undertake and that projects need a clearly defined need and benefit to ensure adoption of the ultimate solution.

The key to doing this strategic planning effectively is the NISO Framework. This high-level strategic model of NISO’s areas of work and interest was first developed in 2005-2006 as an outcome of NISO’s strategic planning process—before the Architecture Committee existed. In reviewing the Framework as a tool for evaluating the Thought Leaders work, the committee felt that it needed to be updated to reflect the changes in the past three years and to add some specificity for evaluating new project proposals. A subcommittee was tasked with updating and expanding the Framework to include: 1) a set of strategic factors based on NISO’s organizational goals, 2) review questions and tactical decision-making criteria, and 3) environmental considerations. The draft of this revised Framework is currently under review by the full Architecture Committee. The updates to the Framework are critical to extending its applicability as a decision making tool. Once approved, the new Framework will be used to evaluate the recommendations from the four NISO Thought Leader Meetings, consolidate and refine recommendations across all four meetings, prioritize the consolidated set, and identify specific work items to pursue in the next two years. Selected decision criteria from the draft revised Framework have been used to do a preliminary analysis of the Thought Leader recommendations and suggest next steps. This is reported in Appendix A. Note that these are preliminary and do not represent the consensus of the Architecture Committee.
Relationship Building

While this strategic work is underway, NISO has already begun pursuing better or new relationships with other organizations, as strongly recommended in all four meetings.

- The first joint project with the UK Serials Group (UKSG) was established. The Knowledge Base And Related Tools (KBART) working group is developing best practices for improving the quality and reliability of data in the knowledge bases that are used for OpenURL linking. Quality of data and services was one of the common threads in the Thought Leader meetings.

- The existing relationship with EDItEUR, which resulted in the successful development of the ONIX for Serials standards, is now being extended to work in the ONIX for Publication Licenses (ONIX-PL) area with the establishment of a joint working group. Licensing issues for electronic content was a common thread in the Thought Leader meetings.

- The SUSHI Standing Committee, responsible for the ongoing maintenance of the Standardized Usage Statistics Harvesting Initiative Protocol standard (ANSI/NISO Z39.93-2007), has furthered the NISO relationship with COUNTER. As a result, the third release of COUNTER’s Code of Practice for Journals and Databases has added implementation of the SUSHI protocol as one of its requirements for compliance. This has resulted in even greater interest in the adoption of the SUSHI standard. Data interchange and promoting the adoption of standards were both common threads in the Thought Leader meetings.

- NISO is jointly sponsoring with ARMA International a U.S. meeting of the ISO TC46/SC11, Information and documentation/Archives and records management, committee in Orlando in October 2009. This is NISO’s first joint effort with ARMA and represents a more active involvement with the SC11 subcommittee within the international standardization arena. Reaching out internationally was a common thread in the Thought Leader meetings.

- NISO participated with OCLC for a symposium of publishers and libraries in March 2009 on metadata (www.oclc.org/publisher-symposium/). Following the symposium, NISO and OCLC jointly commissioned a white paper on Streamlining Metadata Workflow in the book supply chain. A final version of the white paper will be published in June. It will be used to identify areas where further joint work between the two organizations can be done. The creation, quality, and use of metadata were common threads in the Thought Leader meetings.

- The National Library of Medicine (NLM) has submitted a proposal to take Journal Archiving and Interchange Tag Suite (commonly known as the NLM DTD), a schema used for scholarly publishing of full-text journal articles, through the national standardization process. This suite is in some use in institutional repositories and has potential applications in other areas of digital libraries or even research data. Moving it to the national arena will allow it to become a “community” standard as well as give it greater visibility for increased adoption. Additional extensions to the standard could be considered and may address some specific issues from the Thought Leader meetings.
Improving and possibly extending the NLM DTD was a recommendation in a Thought Leader meeting.

- Two additional research reports in conjunction with other organizations are under discussion. The first is a market analysis study of applications related to deposit of researcher output into IRs and publishing content workflow systems. The second is a study of best practices on discovery and storage of research data. Both of these studies are direct outcomes of the Thought Leader meetings.

- NISO is in discussions with OECD about moving their recommendations for citation of research data—published in April, 2009 (http://dx.doi.org/10.1787/603233448430)—to NISO for standardization. These discussions were a direct result of the research data Thought Leader meeting.

These examples are just the beginning of what NISO expects to be a growing list of joint projects with other organizations. As new projects are identified by the Architecture Committee’s strategic work with the Thought Leader recommendations, relevant co-sponsors will be pursued where applicable.

**Next Steps**

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<tr>
<th>Action</th>
<th>Who</th>
<th>When</th>
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<tbody>
<tr>
<td>Finalize and approve revised NISO Framework with evaluation decision criteria.</td>
<td>Architecture Committee</td>
<td>Meeting in Chicago on July 9, 2009</td>
</tr>
<tr>
<td>Synthesize, evaluate, and prioritize all recommendations. *</td>
<td>Architecture Committee</td>
<td>July - December 2009</td>
</tr>
<tr>
<td>Initiate new work items as relevant.</td>
<td>Topic Committees</td>
<td>Ongoing</td>
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<tr>
<td>Establish topics and schedules for next round of Thought Leader meetings.</td>
<td>Topic Committees</td>
<td>Fall 2009</td>
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*For examples of preliminary evaluations against selected decision criteria, see Appendix A.

**Summary**

The Thought Leader meetings have been a tremendous learning experience for NISO, its staff, and its leadership committees. As a new method for conducting pre-standardization work, they have been even more successful than envisioned. New relationships have already been formed and joint work projects initiated. The meetings have raised the profile of NISO in the community and brought NISO’s existence and activities to the notice of new organizations. The breadth of the Thought Leader meeting discussions, before, during, and afterward, have provided some additional insight into the boundaries that NISO can realistically work within.

There are so many opportunities to pursue as a result of these meetings that prioritization of them and project management will be critical to successful implementation. Realistically with NISO’s current resources, there are only a limited number of concurrent projects that NISO staff can coordinate. While this number is up significantly from previous years, thanks in part to the
technological tools put in place through the generous support of the Mellon Foundation, it is still dwarfed by the number of potential projects that are waiting in the wings. The Thought Leader meeting reports and recommendations have proven an excellent opportunity to apply the NISO Framework as a gap assessment mechanism, as well as highlighting some gaps in the Framework itself. By expanding the Framework and building more evaluation assessment criteria into it, the Architecture Committee will be better able to conduct objective evaluations and priority setting of the many recommendations that were made.

Finally, the meetings have further confirmed the findings of NISO’s strategic planning Blue Ribbon Panel that both community support and the existence of a strong “business case” are critical to have in advance of launching any new initiative.
Kavi Information System and NISO Procedures

Background

NISO had long managed its procedures compliance, balloting, committee work, and membership management systems using a mix of paper-based, e-mail, and custom-built, in-house systems that were—from a systems perspective—wholly independent of each other. Many of the systems ran on a particular individual’s desktop computer and thus were not directly accessible by other staff members. This infrastructure simply could not support the complexity of an organization whose work regularly relies on the simultaneous engagement of nearly a dozen active working groups and more than 400 volunteers. In addition, NISO’s strategic direction and changing operating procedures required more capabilities than any in-house developed system could offer. A critical need was to have information systems that all of the committee and working group members could use to collaborate and to speed up the standards development process.

In late 2005, Roy Tennant, at the time on the staff at the California Digital Library, was charged with “review[ing] the current standards development process and provid[ing] recommendations on process improvement as part of NISO’s strategic direction implementation.” His subsequent report would outline a number of the strengths and inadequacies of NISO’s development procedures at that time. It also highlighted a number of critical management functions that needed to be better coordinated and pointed to a solution in the form of a suite of online tools that would support both association management and standards development requirements. As an appendix to the final report, Tennant recommended the acquisition of the Kavi Corporation’s set of standards development tools. With the generous funding from the Mellon Foundation, NISO was able to acquire and implement these tools.

Much of the initial phase of the grant, which was outlined in the interim report from July 2008, focused on updating NISO’s standards process and operating procedures and mapping those processes to the Kavi tool suite. The Kavi system provides substantial flexibility in the design and set-up of a particular customer’s application. But we didn’t want to just map the old procedures to a new system. The system implementation offered an opportunity to re-engineer the standard development processes to fit with the new governance structure, fix inefficiencies noted in the Tenant report, streamline and speed up the development process, and take advantage of new technologies. Beginning with an analysis of ANSI requirements, working group best practices, and a review of the existing information infrastructure, the NISO team worked to frame the processes that would be incorporated into the toolset implementation. Two outcomes from the process review are included in this report. Appendix F reports on the interviews held with past and present working group chairs about their best practices for standards development and recurring issues they experienced that negatively impacted NISO standards developments. Appendix G is an instructional document on the standards development process to aid new working groups in understanding and performing the correct steps in developing a standard.

Website

Following the launch of the website, a period of software maintenance and tweaking began. In addition, new information and extant content had to be ported from NISO’s original server and
management systems to the new Kavi integrated system and its tools. This was done over the
course of the year, as documents were individually loaded and new web pages were created—
totaling over 3.5 GB of data—and as more than 350 member and non-member organizations
were created, along with user accounts for nearly 600 individuals.

The new website provides a number of benefits for NISO and the community it serves. The
public face of the site now provides coherent branding to help users better recognize NISO
resources and services. More importantly, however, it includes improved navigation and better
organization of content so that users can engage with NISO and its products more readily.
Projects underway within NISO now have a space to promote their activities and their
participation in NISO standards activities. One standout example of this is the Shared
E-Resources Understanding (SERU) Registry. SERU is a recommend practice that supports the
sale of electronic content without the legal structure of a license. More than 90 libraries and
consortia and more than 30 publishers have registered on the NISO site their willingness to use
SERU, which has facilitated adoption of the recommended practice in the community.

By having a public interface that ties to the secure workroom and management areas backing the
site, information can be marked by NISO staff or working group and committee members as
public and have it shared without duplicating content or effort. NISO staff are able to use the
customized standards status tracker to build an audit trail of the development of NISO standards
and other projects and have the content immediately populate the public site via a search and
browse interface. Similarly, NISO press releases and member and other related media stories can
be easily added and accessed through specialty interfaces built specifically for these purposes. In
addition, the Kavi system includes integrated public (and private) discussion lists that include
online archives and easy self-subscription so that the information community can easily track
NISO’s work on specific projects and more broadly via the monthly e-newsletter, Newsline. The
improved security for the private member and working group areas—part of the organizational
and individual accounts—also allows NISO to use the website as a way to manage subscriptions
and access to its recently revamped magazine, Information Standards Quarterly.

Finally, with the new site, NISO has been able to take advantage of some Web 2.0 features in
two of its publications: the Framework of Guidance for Building Good Digital Collections and
the Z39.7 Data Dictionary (ANSI/NISO Z39.7-2004: Information Services and Use: Metrics &
statistics for libraries and information providers — Data Dictionary). The Framework of
Guidance is a living best practices document that allows for community discussion and feedback,
so that practitioners can share ideas and experiences, suggest resources, and evaluate those that
have been suggested via the online interface. The Z39.7 Data Dictionary is a continuously
maintained national online standard in a database format that identifies categories for basic
library statistical data reported at the national level, and provides associated definitions of terms.
As an online standard, the terms are fully searchable and the system also provides community
input and feedback mechanisms. It has been receiving an average of 600 hits per months since it
was first launched in the fall of 2008, significantly more than it had ever received in print or PDF
form. Other working groups are now considering how to take advantage of some of the more
collaborative website features in order to increase their community engagement, as well.

Appended to this report (Appendix H) are a set of screenshots of the public NISO website,
www.niso.org, and the back-end tools that have been implemented as part of this project.
Group Collaboration

Perhaps even more important than the website improvements that have occurred as a result of the Kavi implementation are the advances in group collaboration that the tools have provided. The Kavi back-end system is comprised of two main areas: the standards tracker (see “Standards Balloting and Tracking,” below) and group workrooms. These workrooms provide the backbone to all of NISO’s work—from creating secure rooms for voting pools that form around new and review standards to areas for posting information, documents, and ballots for NISO Voting Members and ISO interest groups. The workrooms are where the greatest use of the NISO system can be found. These workrooms serve as the core for each of NISO’s working groups and committees, who are actively using the system for document sharing and collaborative development, as well as meeting management and e-mail exchange between groups and with the public quickly and easily.

The workrooms include essential project management tools for each group. Each workroom includes a contact roster and a group e-mail list for easy communication and alerts. The e-mail list archives can also be searched and browsed in the workroom. Other features are: group calendaring, document management, commenting, balloting, and action items. All of these can be easily seen on a landing page for each group, and new items can be tracked by group members using built-in RSS feeds or downloaded to the user’s desktop for off-line use. The calendars have been a boon to group planning, and include integrated attendance, minutes, and referenced documents that allow group members to not only link to the calendar item and all its associated content, but to download events to their own calendars and share calendar items with other groups in the system and/or the public. In fact, all the features available in a workspace can be easily shared across groups and publicly, encouraging openness without duplicating effort. NISO’s Topic Committees, which provide oversight and guidance to NISO’s working groups and standing committees, can more easily track progress, as well, as workroom activities easily and automatically populate their own workroom space.

In the workrooms, documents can be posted and organized into folders not only so that members of the group can easily access the information, but also so that revisions can be added and retained for versioning and historical uses. As documents are included or updated, those people who have access to the documents are alerted via e-mail by the system, with a description and a link to the new item (which, incidentally, also reduces the number of attachments that must be dug out from e-mail messages and that can clog e-mail servers). In addition, documents can also be opened for commenting, allowing group members to review drafts and provide feedback in one place (often used during the evaluation process for new work items by the Topic Committees), as well as allowing working groups to easily share draft documents for review and feedback by the broader information community. Comments can then be assigned to group members for resolution, and commenters, group members, and the public can be easily alerted when the comments are reviewed and resolved.

Ballots are used regularly not only in the formal standards development process by Voting Members and Voting Pools, but also within groups when approving documents, new work items, rosters, and more. However, they have been used for more informal purposes as well—for instance, when polling the group in order to find the best time for a meeting. Ballots allow members to add comments and view results, and the automated e-mail reminders, ballot history
details, and reporting that are integrated in each ballot make management and recordkeeping for these essential items simple for NISO staff and groups.

By enabling groups to create their own action items, follow up from meetings can be easily tracked as specific items are assigned to individuals; due dates can be added to help ensure follow up. Like all the features of the workrooms, action items can be downloaded for off-line reference.

Akin to NISO’s volunteer groups, NISO staff has been able to use all of these tools to streamline and improve work processes internally as well as with NISO’s volunteers and publicly. In addition, training for new working groups is easily done by automatically populating new workspaces with document folders, help documents, and welcome e-mails. The original Kavi training webinars (supported by the grant) were recorded and are also made available to new users of the system.

**Standards Balloting and Tracking**

A core functionality of the Kavi system and one of the main reasons it was selected is because it was developed specifically to support standards development activities and compliance with the ANSI Essential Requirements, the governing procedures for accredited standards development organizations. By using the Kavi system, NISO was able to implement voting pools, online balloting, and tracking of standards development milestones. Additionally, selected information in the standards tracking system has been integrated with the public website for searching and sharing. Although originally intended for national, ANSI-approved standards, the system has been successfully utilized for international standardization activities as well.

ANSI completed an audit of NISO in August 2008 for the five-year period from 2003-2008. The standards and related documentation that were audited were all from a period prior to the implementation of the new information management system. ANSI identified several findings related to documentation problems that will be improved and, in most cases, eliminated, with the new system. ANSI noted this in several places in the report, as highlighted below.

**Voting Pools and Online Balloting**

*From ANSI 2008 audit report: “In March, 2008, NISO began using Kavi, which tracks the participation of voting pool participants.”*

Although NISO previously had online balloting, the system’s capabilities were extremely limited and required significant software customization and troubleshooting. The new system enables ballots to be presented to selected groups or subsets of members on a per-ballot basis. This functionality was needed to support NISO’s revised operating procedures, which utilize the concept of “voting pools.” Because of the diversity of our members’ interests and the scope of the standards, not every member has the technical knowledge or interest in voting on every standard that is developed. Now at the very beginning of a new standard project or when a standard is up for its periodic review, we canvass the membership using an online ballot to determine who wants to join the final consensus voting pool. Then only those members who join the pool are presented with the final standard ballot.

Custom vote options, other than the default yes, no, or abstain can be set up, which is especially useful for periodic review ballots that require a different set of choices. Comments can be required for “no” or abstain options, which is especially needed for “no” votes where lack of an
explanatory comment can result in the vote being disregarded with respect to reaching of consensus.

A critical ANSI requirement is having “balance” across the different types of organizations who are impacted by a proposed standard. The new system keeps track of both eligible and actual voters by their organization type and tallies the votes to match the ANSI submission requirements. NISO can easily see if a voting pool is “out of balance” before the ballot is opened and make adjustments as needed to balance the pool in advance of opening the ballot. This prevents ballots from having to be extended or even re-issued after the fact because insufficient balance had been obtained. Additionally, the final vote is tallied by the system in a matrix according to vote and organization type that matches the ANSI reporting format, as illustrated in Figure 1, saving NISO staff time and ensuring the results are accurate. Even more important the system provides an audit trail of both the ballot and the voting. Every action taken related to the ballot is tracked whether by a voter or by a NISO administrator.

Additionally, the list of eligible voters can be updated automatically while a ballot is open, which is useful if the voting representative from an organization changes during a ballot or if follow-up is necessary. Voters also have the ability to see each other’s votes throughout the open ballot, which has eliminated a great deal of the behind-the-scenes discussions about a ballot among members and made those conversations more open.

![Table: Voting Statistics](image)

<table>
<thead>
<tr>
<th>Voting Statistics</th>
<th>29</th>
<th>88%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of votes cast</td>
<td>29</td>
<td>88%</td>
</tr>
<tr>
<td>Eligible companies who have voted</td>
<td>29</td>
<td>88%</td>
</tr>
<tr>
<td>Eligible companies who have not voted</td>
<td>4</td>
<td>12%</td>
</tr>
</tbody>
</table>

![Table: Voting Summary by Option](image)

<table>
<thead>
<tr>
<th>Voting Summary by Option</th>
<th># Votes</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaffirm with no change</td>
<td>27</td>
<td>93%</td>
</tr>
<tr>
<td>Revise</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>Withdraw</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

![Table: Voting Summary by Interest Category](image)

<table>
<thead>
<tr>
<th>Interest Category</th>
<th>Reaffirm with no change</th>
<th>Revise</th>
<th>Withdraw</th>
<th>Not Returned</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Interest</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Supplier</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>User</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Not Specified</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>33</td>
</tr>
</tbody>
</table>

Figure 1: Voting results example

One useful feature of the system is the ability to set up reminder emails at the time ballots are created and have the system automatically send them. Previously, a NISO staff member had to manually send out reminder emails, which meant setting up some kind of calendar notification to remind us to send out the reminder! An additional enhancement is that the system only sends reminders to people who have not yet voted, eliminating bothersome reminders to people who don’t need them.
Our old system provided only limited space for providing comments with a vote. As a result, comments were often sent by e-mail and could easily get separated from the actual vote. There was also no audit trail with such e-mailed comments. Voters now have the option of typing comments into the online ballot form or attaching a separate document. Both types of comments are stored directly with the vote and archived with the closed ballot. For ANSI compliance, it is critical that NISO respond to all comments received and this system ensures that this task is done.

If any “no” votes are received on a ballot, there is required follow-up, resolution of objections, and potential vote changes that must be recorded. Previously, such follow-ups were documented in e-mails, if at all. Agreed upon vote changes as a result of these follow-up interactions could not be recorded in the old system after a ballot closed, leaving mismatches in what the system recorded and what the final vote tally actually was, as documented in the forms sent to ANSI. This mismatch and the lack of proper documentation regarding resolution of “no” votes and objections were areas that ANSI cited in the audit as needing improvement. The new ability of NISO staff members to administratively amend a closed ballot allows the recording of any follow-up discussions regarding objections as well as what actions were taken, the attachment of written documentation such as e-mails that were exchanged, and the recording of a resulting vote change, if relevant. The original ballot results are archived separately at ballot close, allowing a comparison between it and the final “resolution” vote as an added audit trail for ANSI.

**Standards Status Tracking**

*From 2008 ANSI Audit report: “NISO began using Kavi to assist in its standards development activities, and via Kavi, standards development milestones can be tracked.”*

One module of the Kavi system, referred to as Status Tracker, allows all information related to a standard and its status over time to be tracked and documented. A record has been entered in the system for every active, withdrawn, or in development standard in NISO’s portfolio. This is the most comprehensive database that NISO has ever had of its standards.

In addition to bibliographic, descriptive data about the standard, we now are able to add “activity” information and its related documentation. Activities are organized by the major life stages of a standard: proposal, development, trial, ballot, publishing, review, and withdrawal. Major milestones at each stage are tracked. Links from activity records can be added directly to archived ballots as well, eliminating the need for re-entering ballot summaries. Never before has NISO had this ability to track the entire history of a standard over its lifetime. An example of an activity record is shown in Figure 2.
The Status Tracker database is integrated with the public website to allow searching and display of information about standards without the staff having to do any HTML-markup or duplication of information. This ensures that the information the public sees is as up-to-date as that which the staff uses. The search page defaults to a brief display of all standards, regardless of status, sorted by standard designation along with a search box (see Figure 3). The full display provides complete bibliographic information and links to a free downloadable PDF or to purchase a print copy from a third-party supplier.
Records Management

*From ANSI 2008 audit report:* “The auditor notes that NISO has recently started utilizing software developed by Kavi for the online implementation of the standards development process, including submission of forms to ANSI.”

As with many small offices, NISO’s records were scattered among paper files, individual user’s desktops, backup media, and e-mail storage. This situation was compounded by the fact that all the NISO current office staff were hired after 2006 and there was no overlap with the previous staff, so all organizational memory of the location of records was lost. This was a major cause of some of the documentation problems that were noted in the recent ANSI audit.

An information system alone cannot solve this problem. It must be combined with new procedures and the discipline among staff to follow the procedures in a timely way. Although the expanded program of work and modest staff size continue to make good recordkeeping a challenge, the Kavi information system is critical to enabling the process.

When forms must be submitted to ANSI, the information needed to complete the forms is all available online—in Status Tracker, in the online ballots, or in the working group area. Copies of submitted forms, e-mail correspondence, and other related documents can all be added to Activity records (see Figure 2) and information already in the Kavi system can be linked.

Whether for NISO’s own use, for an ANSI audit, or for collection for transmission to the official archives at the University of Maryland, all the relevant records can be found easily by anyone on the NISO staff.

International Standardization Support

NISO has been the ANSI-designated U.S. Technical Advisory Group Administrator for the International Organization for Standardization (ISO) Technical Committee 46 (TC46) on Information and Documentation for decades. Every standard that comes up for ballot has to be submitted to the U.S. NISO voting members and the resulting votes and comments submitted as the U.S. vote on the standard. In the past, all the balloting for international standards was handled through e-mail and votes had to be manually tracked and compiled. This was a rather onerous burden and we have, as a result, missed some ballot deadlines.

All of the international ballots are now managed through the Kavi online balloting function. The PDF copies of the draft ISO standards under consideration can be stored online and linked to the ballot, rather than sending these large files through the e-mail system. The standards can also be kept in a protected area to enable NISO to comply with ISO’s copyright requirements for limited distribution, even of draft standards.

NISO has also taken on the Secretariat for TC46, Subcommittee 9 (SC9), Identification and Description. The Kavi system is being used to manage all the documents for this activity. Through the sharing functions, we are able to easily mark those documents that are available for public viewing. A public webpage with links to those documents is automatically generated (see Figure 4). Additionally, all the mailing lists for interest groups, U.S. voters, and the international members of SC9 are managed through the Kavi system.
Summary and Future Directions

Since its launch in March 2008, the usage of the site has increased significantly. In April 2009, www.niso.org has received 31,219 visits from 17,844 unique individuals, up 56.7% and 35.1% respectively from April 2008. Downloads of NISO’s publications, which are available freely to the community, have increased from 3,380 downloads in April 2008 to 7,536 in April 2009, an increase of 223%. The NISO site has also been a primary vehicle for promoting NISO educational events, which have been attended by more than 1,200 people since the site was launched. Presentations, slides, and background information are hosted openly on the site so that people who are not able to attend can still benefit from NISO’s education programs.

NISO has many plans for the continued expansion and use of the system and its functionality. In the next release of the basic software, additional collaborative editing tools, similar to those in Google Docs will be released. The Status Tracker functions are expected to be more integrated with the group workroom area, allowing NISO to give working group chairs more involvement in the ANSI approval process. The Status Tracker database will be expanded to add the full portfolio of NISO publications, including recommended practices, technical reports, and white papers. A corresponding search function and public webpage display for these other document types is planned. There is also opportunity to better integrate our website with TechStreet, our third-party supplier of print documents, and create our own NISO storefront for e-commerce. Of course, we will continue to provide support and training to all the NISO members, development partners, and committee members on how to use the system most effectively. And the NISO staff continue to learn from our users as they discover—or invent—new ways to use the system to support their work.
Financial Report

As of the end of January, the entire grant, as well as the interest accrued on the grant funds, had been expended.

Interest earned on the funds has totaled $2,834.73 over the entire period through the end of January 2009. This total is only $76.70 higher than the figure provided in the interim report, due to market conditions and the extremely low interest rates banks were providing on interest-bearing checking accounts during this period.

Variations from Budget

The budget for the grant was divided into two sections, one part for the technology implementation and best practices, and one part for the Thought Leader meetings. The Final Report of Grant Financial Activity included in Appendix I details the amounts spent versus the budgeted amounts.

Within the standards process review and technological implementation, NISO was able to undertake much of the analysis and procedure review for less than was budgeted through negotiation with the consultant. The website design had a modest expense over budget because of several iterations needed to arrive at the final design. The implementation and customization fees were less than anticipated because of a more streamlined approach and less need for technical assistance by outside vendors than anticipated throughout the process. Kavi was also able to undertake considerably more work for less than budgeted through negotiation of the final contract. The funds saved in the setup process were re-allocated toward extending the monthly software maintenance as were described in an e-mail to the Mellon Program Director on February 4, 2008.

The Thought Leader meetings were slightly over budget in many areas. As originally proposed, NISO staff would undertake a good deal of the organization and planning of the meetings. As work progressed, it was decided—again, with the assent of the Mellon Program Director in the February 4, 2008 e-mail—to re-allocate those funds to outside consultants who would undertake the organization and planning work to bring the Thought Leader meetings together. Funds for planning were thus expended through the consultants’ fees for organizing the meetings. The travel subsidy for the meeting was exceeded primarily because of the increased size of the groups, which was considered important in order to get the greatest depth of perspective from the various constituent groups. During the organization, many new stakeholders with different perspectives were identified and rather than limiting the size of the group by excluding some participants, a decision was taken to err on the side of inclusiveness. In addition, a few participants from the UK were asked to participate, with higher than anticipated costs.

Overall, the total expenses for the grant exceeded the grant income by $5,868.27, which is being assumed by NISO as part of its ongoing work.

Post Grant Support

There will be continuing ongoing costs for monthly maintenance and support of the Kavi software, which will be supported by NISO and its membership base. The increased pace of development, the improved customer service capabilities, and the overall organizational
efficiencies provided by the system allow NISO to support this software as an ongoing aspect of its work. There are a number of potential projects that are outcomes of the NISO Thought Leader meetings. NISO will undertake some of this work on its own, while seeking support from the community for other development projects that are deemed by the Architecture Committee and the community to be worthy investments.

A detailed report of expenses and interest earned are included in Appendix I.
Appendices

Appendix A:
Preliminary Evaluations of Thought Leader Meeting Recommendations
*Included in this document.* This appendix contains a preliminary evaluation of the Thought Leader recommendations using selected decision criteria from the draft updated NISO Framework.

Appendix B:
NISO Thought Leader Meeting on Institutional Repositories

Appendix C:
NISO Thought Leader Meeting on Digital Libraries and Collections
*Transmitted in a separate file.* A final report produced by Judy Luther on the Digital Libraries and Collections Thought Leader meeting.

Appendix D:
NISO Thought Leader Meeting on E-Learning and Course Management Systems
*Transmitted in a separate file.* A final report produced by October Ivins on the E-Learning and Course Management Systems Thought Leader meeting.

Appendix E:
NISO Thought Leader Meeting on Research Data
*Transmitted in a separate file.* A final report produced by Maureen Kelly on the Research Data Thought Leader meeting.

Appendix F:
Report on Interviews with Working Group Chairs
*Transmitted in a separate file.* A final report on the interviews conducted by Pat Stevens, NISO consultant, and Karen A. Wetzel, NISO Standards Program Manager, with co-chairs of NISO technical working groups.

Appendix G:
Managing NISO Standards Development
*Transmitted in a separate file.* An instructional document on the process for development of NISO standards, by NISO consultant Pat Stevens, that was provided to working group participants and chairs.

Appendix H:
NISO Kavi System Screenshots
*Transmitted in a separate file.* Screenshots of the NISO website, www.niso.org, and the back-end technological tools that were implemented as part of this grant. These were also used in the creation of an educational document for new working group chairs and members.
Appendix I:
Final Report of Grant Financial Activity
*Transmitted in a separate file.* A financial report detailing all of the grant-funded payments for consultants, software service contract, contract programming, and Thought Leader facilitation.
Appendix A:
Preliminary Evaluations of
Thought Leader Meeting Recommendations

This appendix contains a preliminary evaluation of the Thought Leader recommendations using selected decision criteria from the draft updated NISO Framework. Suggested action items are given. Note that these evaluations and actions do not represent a consensus of the NISO Architecture Committee; their full evaluation and final action decisions are still in progress. The Architecture Committee will review these recommendations and decision criteria (along with others in the NISO Framework not outlined here) during their meeting in Chicago on July 9, 2009.

Institutional Repository Thought Leader Meeting

Recommendations:

NISO should investigate a solution that renders the incremental cost of depositing across multiple domains virtually zero. A common deposit mechanism should be developed to allow institutional repositories to capture objects as close to their creation point as possible. This tool would likely be a desktop widget that exposed scholarly objects to their creator's choice of multiple deposit domains.

- NISO should identify a handful of specific domains to be part of the beta process (i.e., selected test journals, content management systems, institutional repository systems, subject matter repositories, and learning object repositories).
- NISO should facilitate the determination of mandatory and optional elements that must be captured by the tool.
- NISO should facilitate the examination of standards that might be repurposed or leveraged to address use cases, content types, and data elements.
- NISO should help organize a group of representative stakeholders to coordinate the development of a rapid widget prototype.
- Once the prototype was developed and tested, NISO and its partners would be responsible for analyzing results and extrapolating standards off of the experience.

Goals:

- Explore metadata, formatting, and transmission use cases through practical application and testing.
- Encourage implementation of OAI-ORE, along with analysis of packaging and data movement issues.
- Highlight some of the key problems that are inhibiting deposit of content in IR systems and determine if process simplification is possible. While this may not be possible, the project should provide continuing data on issues facing IR deposit.
Categorization:

Is this project focused on:

- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:

- Users
- Organizations
- Services

Does this project connect to:

- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:

- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

Key Internal Factors:

- **Does this serve the businesses that are NISO members?**
  Possibly, particularly a large segment of NISO’s library members, although less applicable for publishers initially. It is not likely to significantly address the business needs for automation vendors.

- **Why would NISO take this on?**
  The seamless integration of content ingest should provide a significant impact for authors and content repositories—both library and publisher. In addition, a practical test case would provide information on metadata needs and other.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  NISO has not historically engaged in software development of this sort. As such, NISO does not internally have access to this expertise. Depending on the response to the initial market assessment research, potential partners do have the expertise and might be willing to contribute – particularly if a development project is funded.

Key External Factors:

- **Does this standard do something that isn't found elsewhere (in standards or technology)?**
  No, work would likely be developing best practice and broader application around work already ongoing (since the meeting and recommendations were promoted).

- **What other standards exist that could meet these same needs?**
  There is current work on adoption of SWORD, particularly within Microsoft and the JISC. Other projects have been noted.

- **Is there another organization that can take this on if NISO lets it go?**
  Likely, the IR community will continue work on its development, however there will likely be little engagement with other constituent groups.
Potential Next Steps

There is some NISO interest in determining the needs and willingness among prospective stakeholders in pursuing this program. There have been some significant developments in the market relating to deposit structures. Prior to any work, a review of these changes as well as an investigation into whether a working group can be brought together to actually decide on the tool's scope and to prototype it will need to be done. If it appears this can be accomplished, NISO will attempt to seek a grant to support the work. Microsoft has expressed willingness to potentially co-sponsor additional work in this regard. If approved as a new work project by the AC likely the following next steps would be undertaken.

1. Retain a consultant to undertake research on market needs, technology changes, and interest in community.
2. Devise a list of 20-25 prospective stakeholders, including participants in the Thought Leader session.
3. Contact each of them and explain the project's background and goals.
4. Determine definitively how many of them would be willing to commit to (a) meet 3-5 times over the next two years, (b) contribute organizational resources to investigate, develop, and test the tool, (c) assist in the rollout of the prototype to the market, and (d) work with NISO to evaluate feedback and determine next steps.
5. Evaluate the responses to #4 above and determine whether to pursue this as a NISO project, with potential funding support.
Digital Libraries and Collections Thought Leader Meeting

**Recommendation #1: Develop tools to evaluate publisher metadata for accuracy**

NISO has two ongoing projects addressing this issue: Knowledge Bases and Related Tools (KBART related to OpenURL) and a study of the Metadata Supply Chain in partnership with OCLC. The KBART project is focused on journal OpenURL linking and improving the metadata publishers supply that populates library OpenURL knowledgebases. The research report conducted by Judy Luther, co-funded by OCLC, is an outcome of a meeting OCLC hosted in and potential partnerships on related work.

**Goal:**
- Improve publisher-supplied metadata for reuse in library systems and other applications.

**Categorization:**

Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

**Key Internal Factors:**

- *Does this serve the businesses that are NISO members?*
  Absolutely. This project will impact not only publishers and libraries, but also the intermediaries in the supply chain of various metadata.

- *Why would NISO take this on?*
  There is a tremendous amount of inefficiency and duplication in the development and exchange of metadata. Improving the workflow, consistency, and exchange of metadata could provide large-scale benefits to the community.

- *Is this an area of interest to the NISO community?*
  Yes, both within NISO’s membership and for organizations outside of NISO’s membership.
• **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  Yes, NISO has a long history of producing standards related to bibliographic metadata and facilitating its exchange. Many in NISO’s community are already active in related projects and have expressed a willingness to participate.

• **Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?**
  While some certification programs related to the supply chain of metadata already exist, these are generally run and managed by publisher organizations, which leave out the interactions with automation vendors and/or libraries, who do play a role in metadata exchange.

• **Is this within NISO’s scope?**
  Given NISO’s history this project fits well within NISO’s scope.

**Key External Factors:**

• **Does this standard do something that isn't found elsewhere (in standards or technology)?**
  In some ways, there is duplication and overlap with work ongoing with BISG and BIC (UK). However, the library community and automation vendors are not engaged in those programs. There are also subtle but important differences between metadata for the book trade and for libraries.

• **What is the impact of this work project?**
  The investment by libraries in creating bibliographic information is tremendous and building efficiencies could save the community millions of dollars. In addition, large booksellers and book distributors have a vested interest and data has pointed to significant ROI on investments in improved data. Finally, publishers would likely see increases in discovery, sales and usage of information because of improved metadata.

• **What other communities have an interest in work project?**
  The potential interest and ties to this project are tremendous. In addition to the library community, there are a large number of publisher’s systems vendors who might engage in such projects.

• **Is there another organization that can take this on if NISO lets it go?**
  In parts, yes, there are other organizations that could pursue this work. However, many aspects of this project and many of the constituencies engaged would not be addressed by other organizations.

**Potential Next Steps:**

• Additional Preliminary work: NISO partnered with OCLC to produce a research report on supply chain of metadata from publishers to libraries. The research and report, produced by Judy Luther, is due for release in June. Talks have begun about engaging the community in a workflow assessment project.
Proposed advanced work: Develop and promote standardize crosswalks between ONIX and MARC, RDA. Explore workflow processes and define transactional workflow maps to describe data transfer to see if there are potential efficiencies or reuse possibilities in the metadata exchange. Finally, explore the possibility of feedback loops and reuse by publishers to continually enhance metadata. Quantify, if possible and educate publishers on benefits they will receive through improved metadata.

**Recommendation #2: Establish guidelines for aggregating content**

**Goal:**
- Set up best practices for the community on how one should undertake text-mining initiatives and how publishers should provide controlled access to appropriate and verifiable text or data mining by subscribers.

**Categorization:**
Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

**Key Internal Factors:**
- **Does this serve the businesses that are NISO members?**
  In part. This project focuses on the users of licensed data at institutions and the content they are trying to access from publishers.

- **Why would NISO take this on?**
  As the use of text and data mining tools increase, the need for rationale and fairly simple best practices would reduce confusion and customer service requests at publishers.

- **Is this an area of interest to the NISO community?**
  Relatively few scholars are undertaking work in these areas, but their numbers are growing. While possibly early in the adoption curve, enough users are interested in this activity that expanded use of data mining tools could become a problem in the near future.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
The business practices surrounding management of data and controlling access appropriately are certainly existent within NISO’s community.

- **Is this within NISO's scope?**
  Developing community best practices toward providing access is a common NISO theme. Facilitating the legitimate reuse and application of content is also well within NISOs scope.

**Key External Factors:**

- **Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?**
  It is unlikely that this project would be undertaken by another organization at this point.

- **What is the impact of this work item?**
  The expansion of the use of data analysis tools by scholars could further open the doors for new avenues of analysis and discovery. There are potentially other applications of meta-analysis across corpora of papers and other research output.

- **What other communities have an interest in this work item?**
  There would likely be limited interest in this topic outside of research institutions. While there may be interest in the corporate environment, their license restrictions would likely be too restrictive to allow it.

- **Is there another organization that can take this on if NISO lets it go?**
  Possibly EDUSERVE or CNI might be interested in this work. Some funding agencies might support individual work, but standardization across publishers/content providers is unlikely. Because of the impact being so narrowly focused it might struggle to find support.

**Potential Next Steps:**

Reach out to interested communities and assess the needs for such a project. It is possible that the work described here is only of limited interest and that current management structures could be adequate. In particular, discussions with the AAP/PSP community, the International STM Association, and other key members of the publishing community are needed to gauge the level of demand for text mining access to systems.

**Recommendation #3: Review and recommend authentication methods**

**Goals:**

- Assess the current state of IP based authentication systems, the points of failure and make recommendations for satisfactory performance.

- Establish recommended practice for publishers to provide users with “graceful error routing.”

- Determine how to identify content that is freely available to users.
Categorization:

Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

Key Internal Factors:

- **Does this serve the businesses that are NISO members?**
  Yes, authentication is a challenging problem that companies have spent countless hours of staff time and resources to improve.

- **Why would NISO take this on? Improving authentication will eventually save time, money and improve customer satisfaction.**
  Creating a successful authentication standard (if possible) would draw attention to NISO and expand the breadth of organizations that participate in NISO, who would be interested in participating in a successful authentication project.

- **Is this an area of interest to the NISO community?**
  Despite the recent shifts in the acceptance of Open Access content, it is clear that most publishers will remain in a subscription-based system that requires some form of authentication. Simplifying access control will enhance the use of licensed content and improve customer satisfaction while reducing customer service costs.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  There is certainly expertise within NISO’s community related to authentication. Some newer forms of authentication are being developed and have their sources outside of the publishing/library community.

- **Is this within NISO’s scope?**
  While authentication’s specific application within the publishing/library & automation systems realms, the development of software and network services is outside of NISO’s scope.

Key External Factors:

- **Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?**
  It is very unlikely that standards in authentication will develop from the publishing
industry. While improvements can be made on the edges and in applications within our community, such as transfer from one authentication system to another in a single-sign-on environment, it is unlikely that significant authentication work can be achieved within NISO. Work is likely to be more successful at the ISO, W3C, or OASIS organizations than it would be within NISO. In addition, government (for taxing or benefits purposes) and banking will ultimately be the drivers of authentication, two organizations that are generally outside of NISO’s core constituency.

- **What is the impact of this work item?**
  Streamlining access control will certainly have a tremendous impact on the community. IP authentication is fraught with problems but is the best generally adopted method of control at the moment. Developing a new alternative that is platform, location, and device neutral would alleviate numerous issues, but it is unlikely that NISO is the right place for this work.

- **What other communities have an interest in this work item?**
  Authentication spans a broad range of industries well beyond the content distribution and library markets. Banking, e-commerce, government services all have significant investments in seeing authentication succeed. Work is taking place in a variety of standards organizations, such as the W3C, IETF, ISO, OASIS.

- **Is there another organization that can take this on if NISO lets it go?**
  Most definitely. Whether this representation will adequately meet the needs of the media and information industries is an open question. However, being a relatively new field, deeper consensus among the market movers is probably required before NISO develops industry-specific guidelines.

**Potential Next Steps:**

- Presently working on Single-Sign-On (SSO) Authentication initiative, overseen by the Discovery to Delivery Topic Committee.
- Also begun outreach to JISC and authentication management community to explore joint projects.

**Recommendation #4: Monitor and assess identifier initiatives**

**Goal:**

- Improve interaction among identifier initiatives.
- Evaluate the need for interoperability among identifiers.

**Categorization:**

Is this project focused on:

- [ ] Identification
- [ ] Format
- [ ] Structure
- [ ] Transactions
- [ ] Policy

Is this project mainly addressing the needs of:

- [ ] Users
- [ ] Organizations
- [ ] Services
Does this project connect to:

- People  Information Objects  Collections  Organizations  Services

This project falls under the scope of which Topic Committee:

- Business Information  Content & Collection Management  Discovery to Delivery  Other

**Key Internal Factors:**

- *Does this serve the businesses that are NISO members?*
  Absolutely. This work serves the business needs of all members on identifier issues with of NISO’s constituency, in particular large media companies and large libraries.

- *Why would NISO take this on?*
  Both as part of ongoing work, as well as part of NISO’s regular responsibilities as Secretariat for ISO TC 46 / SC 9.

- *Is this an area of interest to the NISO community?*
  This topic is critical to all of NISO’s constituencies. Additionally, there has been a lack of coordination in this space, with multiple groups working in their own spheres of influence.

- *What expertise is needed to create/update the standard, and does NISO have access to that expertise?*
  NISO can draw on decades of leadership expertise in the topics associated with this project. In addition, NISO can leverage its partnerships at the ISO level and with its media industry partners to gather the requisite expertise.

- *Is this within NISO's scope?*
  This project fits exactly in line with existing work and NISO’s scope of future work.

**Key External Factors:**

- *Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?*
  This is work that is actually taking place at an international level as part of the TC46/SC9 ad hoc group on identifiers interoperability. This group has been inactive for a number of years, but is being revived under NISO’s leadership.

- *What is the impact of this work item?*
  Through coordination and semantic interlinking, discovery of related objects or entities or people will be more easily discoverable. For example, linking through the creator of an object, with its multi-media formats, performances, its component musical, video, or other pieces in a seamless way could significantly enhance understanding, and potentially sales of related content.

- *What other communities have an interest in this work item?*
  All areas of the media and library supply chain would have significant interest. The supply chain of materials and retailers would eventually have interest if it were successful. In addition, a range of media-related industries have also expressed interest, such as advertising, rights management and some manufacturing.
• *Is there another organization that can take this on if NISO lets it go?*  
As this is an ISO project, they are the obvious leaders. It is possible that they would continue without NISO support and organization.

**Potential Next Steps:**
• This project falls wholly within NISO’s ISO TC46/SC9 Secretariat responsibilities. Presently NISO is working with Sam Oh, chairman of SC 9, and a small group of standards experts at the ISO level to map identifiers and metadata in a semantically rich way.

**Recommendation #5: Incorporate packaging in e-journal standards**

**Goal:**
• The NLM DTD was described as being “inelegant” compared with that of the EPUB standard. It was suggested that the packaging of component parts of an article should be improved.

**Categorization:**
Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

**Key Internal Factors:**
- *Does this serve the businesses that are NISO members?*  
Yes the project serves the needs of NISO’s community, in particular the publishing industry, which relies heavily on the NLM tag suite for encoding content. In addition, other members of NISO’s constituency rely on NLM DTD formatted content. It is likely that because of the success

- *Why would NISO take this on?*  
It is likely that because of the success of the journal version of the NLM DTD, the ebooks version will be broadly adopted.

- *Is this an area of interest to the NISO community?*  
This topic is critical to all of NISO’s constituencies, although the library community
is likely not aware of the ramifications of the DTD to scholarly output and preservation.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  NISO can draw on key developers with expertise in the topics associated with this project. In addition, engaging in this work will also likely expand NISO’s membership to those organizations that work closely with the DTD.

- **Is this within NISO’s scope?**
  Although, this is a new branch of work within NISO, the file formats that constitute the foundation of the publishing industry should certainly be of concern and areas for standardization within NISO.

**Key External Factors:**

- **Is this a work project that NISO should undertake, or is it more appropriate for another standards organization?**
  This is work that fits closely with other work that is currently underway within NISO. In particular, this relates to the XML schema work underway as part of the NISO/DAISY Digital Talking Book standard revision.

- **What is the impact of this work item?**
  As ebook distribution expands, the formats that are developed for creating ebook and journal content will play an important role in how content is created, distributed and preserved. Rationalizing and standardizing many of these formats could prove an incredible benefit to the community and significantly reduce costs.

- **What other communities have an interest in this work item?**
  The impact of the NLM DTD structure go well beyond the STM publishing world, extending to policy papers, fiction, and even to comic books. As such all publishers or distributors of online content will likely be interested or impacted by this work project.

- **Is there another organization that can take this on if NISO lets it go?**
  NLM would continue to undertake development of its DTD, however many issues would likely go unsolved without the critical eye of the standards process. Other organizations focused more on XML, such as OASIS are potential development outlets for this work.

**Potential Next Steps:**

- Likely future action: NLM has submitted a new work item proposal to bring NLM DTD tag suite and profile DTDs into NISO standardization process. As part of this process, this idea will be brought to that working group once it is formed for consideration.
Recommendation #6: Identify format properties of PDF

Goal:
- To provide a simple metadata structure through which the format properties of a PDF can be expressed prior to delivery or opening the content.

Categorization:
Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

Key Internal Factors:
- Does this serve the businesses that are NISO members?
  While a nice addition to the functionality of PDF files, the need for this work project is quite limited. Many NISO members rely heavily on PDF in their daily business, however, so its format and structure could impact the business of NISO members.

- Is this an area of interest to the NISO community?
  There is some limited interest in enhancing the visibility of content within files. However, like text mining, the use and therefore the interest are limited.

- What expertise is needed to create/update the standard, and does NISO have access to that expertise?
  A thorough understanding of the PDF structure is needed and while there are some in our community possessing some of this technical expertise, it may be more appropriate for the ISO TC 171 committee, which is leading all the PDF standardization work.

- Is this within NISO's scope?
  While metadata standards are within the scope of NISO, actual software applications are outside of NISO’s scope.

Key External Factors:
- Is this a work project that NISO should undertake, or is it more appropriate for another standards organization?
  This work project may be more appropriate for the ISO TC 171 group, which is the home for the PDF standardization work.
What is the impact of this work item?
While some applications require an understanding of the content type of a PDF file, it is not a common use that most end-users or libraries require. Pushing the project forward could enhance reuse of content.

What other communities have an interest in this work item?
AIIM has the lead on most PDF-related standardization, much of which is done through the ISO TC 171 committee.

Is there another organization that can take this on if NISO lets it go?
Adobe or ISO TC 171 might undertake the work, if there is enough community interest.

Potential Next Steps:
- Discuss with the Secretariat of ISO TC 171.

Recommendation #7: Establish a protocol to communicate system downtime

Goal:
- To develop an automated system that tests whether a system is up or not, which would provide a consistent check on systems performance and allow more detailed responses if a resource is unavailable than present “resource unavailable” messages.

Categorization:
Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

Key Internal Factors:
- Does this serve the businesses that are NISO members?
  Yes, systems performance is often not well monitored unless there are reported problems.

- Why would NISO take this on?
  There are significant potential savings for both libraries and publishers in customer service expense in being able to provide end-users more information about why or when
systems are unavailable. Also increased monitoring of systems performance could increase usage for resources in cases where systems are down, but the outage is not reported.

- **Is this an area of interest to the NISO community?**
  Increasingly, libraries are focused on improving their performance measurement and assessment systems.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  Some expertise of web protocols and automated pinging mechanisms would be required. However, this is certainly expertise in our community related to these issues.

- **Is this within NISO's scope?**
  Transfer of information between publishers and libraries is certainly within NISO’s scope. Also developing best practices for performance measurement is another area of work that NISO has been engaged in for some time.

**Key External Factors:**

- **Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?**
  Because of the focus specifically on publishers systems this is appropriate for NISO to undertake. However, the broader question of systems maintenance and performance are dealt with by W3C and the IETF.

- **What is the impact of this work item?**
  There could be significant reductions of customer service complaints and potentially increased usage of resources.

- **What other communities have an interest in this work item?**
  The application of this work could be extensive, since building an understanding of when systems is down effect all areas of the online community. Although the downside of increased network traffic caused by this automated system needs to be considered.

- **Is there another organization that can take this on if NISO lets it go?**
  IETF and the W3C might undertake such a work item, or possibly could have work on this already underway.

**Potential Next Steps:**

- Ongoing related work: NISO has received and is reviewing a proposal to undertake a review of the DLF ERMI work, including a review of the ERMI data dictionary, the workflow analysis, and applications of ERMI in the marketplace. One aspect of the workflow study is a gap analysis of where standards activity is needed or efficiencies could be enhanced. Systems performance review, which would include this downtime assessment, could be one area of new work.
Recommendation #8: Address issues of title changes in journals

Goal:

- To establish best practices for improving information regarding title changes over time.

Categorization:

Is this project focused on:

- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:

- Users
- Organizations
- Services

Does this project connect to:

- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:

- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

Key Internal Factors:

- Does this serve the businesses that are NISO members?
  In many ways, yes, it does. In particular, this project would address the problems that libraries have in managing titles over time. The publishing community also would see benefit from enhanced discoverability of back-issue content through better discovery.

- Is this an area of interest to the NISO community?
  In particular, the library community faces tremendous problems in connecting titles over time and ensuring complete coverage. Also, end-user discovery of legacy information could be inhibited because of missing metadata about previous, but related titles.

- What expertise is needed to create/update the standard, and does NISO have access to that expertise?
  A thorough understanding of the title change and management process in libraries is necessary to undertaking this work. These skills are abundant within NISO’s membership.

- Is this within NISO's scope?
  Absolutely. Management, preservation, and access to journal information are all historical strengths of NISO.

Key External Factors:

- Is this a work items that NISO should undertake, or is it more appropriate for another standards organization?
  While partnership with organizations like CLIR, NASIG, or UKSG and the
publishing associations would be useful in promoting the project’s success, the project would benefit from NISO’s cross-section of both the publishing and library communities.

- **What is the impact of this work item?**
  If conducted, this work project could simplify library management of titles over time. It could also expand usage of back files through facilitating discovery of back-issue content.

- **What other communities have an interest in this work item?**
  There is some interest in this project among the publishing community, but the library community primarily drives it.

- **Is there another organization that can take this on if NISO lets it go?**
  Unlikely.

**Potential Next Steps:**

- Review ongoing related work: Presently, the UKSG-sponsored Project Transfer is addressing some aspects of this issue related to when titles move from publisher to publisher. An NFAIS report on article-by-article publishing only touches on this topic. NISO and its Business Information Topic Committee have provided comments to NFAIS about their draft. Additionally, there are ongoing discussions about a new work item that may be submitted to NISO regarding the online representation of journals, which will also address this issue.
E-Learning Thought Leaders Meeting

**Recommendation #1: Develop standards or best practices for content interoperability:**

- Develop best practices for how content is used within the context of e-learning systems.
- Develop standards for content integration from publisher/content provider to systems vendors that would improve access and reduce costs.
- Develop standards for the rights expression language/semantics and its transmission.

**Goal:**

- Address the concerns within the publishing community about the reuse of content within e-learning systems. Content is often copied and placed into these systems, sometimes without rights to do so, and occasionally without appropriate access controls.

**Categorization:**

Is this project focused on:

- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:

- Users
- Organizations
- Services

Does this project connect to:

- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:

- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

**Key Internal Factors:**

- **Does this serve the businesses that are NISO members?**
  
  Distribution of content to students is a critical component of online usage. Support for providing access to content in an appropriate channel is in the interests of both publishers and libraries.

- **Why would NISO take this on?**
  
  This is the one obvious area of overlap between content producers and e-learning systems vendors. The former are members of NISO’s constituency, the latter are not.

- **Is this an area of interest to the NISO community?**
  
  There are considerable ramifications for use of copyrighted content posted within e-learning systems. For publishers, these include diminished usage reporting of
authorized use and potentially unauthorized access. For libraries or learning institutions, this could potentially be an area of liability if not handled appropriately.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  NISO has limited experience working with e-learning systems, but there are segments of NISO’s membership who have a great deal of expertise in management of electronic resources and the policy frameworks that center on distribution of content.

- **Is this within NISO's scope?**
  Assisting the community with the development of best practices for the distribution of online content is within NISO’s scope. However, there is a concern that this might tread too closely to policy questions that are best handled in other forums. Also, NISO has not previously undertaken rights expression work, leaving that area to other organizations better poised to address the policy questions involved.

**Key External Factors:**

- **Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?**
  Because of the scope of the standards organizations that work in this space and the limited participation by many publishers in that group, NISO could bridge between the two communities interested in this topic.

- **What is the impact of this work item?**
  Increasingly, e-learning systems are becoming a gateway for students into content from publishers. Developing best practices that address how this interaction takes place and what the terms of that exchange are could be potentially significant.

- **What other communities have an interest in this work item?**
  The educational community, professors, educators, etc., should have an interest, however their engagement in the topic is likely limited. Certainly, the providers of e-learning systems have an interest in establishing best practices for content hosting or linking.

- **Is there another organization that can take this on if NISO lets it go?**
  The IMS Global organization could undertake this work, however there is limited representation from the publishing community in its membership. A joint project might be appropriate.

**Potential Next Steps:**

Given NISO’s lack of historical engagement in e-learning systems, engagement in this area should be measured, well considered, and done in partnership with standards or best practice organizations already active in this space. The NISO Architecture Committee will be considering these recommendations during its meeting in Chicago.
Recommendation #2: Explore the feasibility of a COUNTER type system for e-learning usage measurement.

Goal:
- Build on COUNTER’s expertise in usage reporting to better measure usage of e-learning systems. Such measurement is a key criterion for reviewing systems and their impact in the community.

Categorization:
Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

Key Internal Factors:
- Does this serve the businesses that are NISO members?
  Assessing the value of the systems that libraries and institutions manage is of interest to the educational members of NISO. It has less impact on many current NISO members, who are not engaged in e-learning systems or environments.

- Why would NISO take this on?
  This work project could extend NISO’s experience related to usage measurement and reporting into new environments.

- Is this an area of interest to the NISO community?
  It is unlikely this would be of great interest to more than a few of NISO’s present members. While learning outcomes is of critical importance to the education community, it would be less so to the publishing or library community that are not directly involved in e-learning systems.

- What expertise is needed to create/update the standard, and does NISO have access to that expertise?
  While NISO has expertise in journal and publication usage, it has less experience in usage tracking of systems outside of that environment. It is unclear how much of this expertise is transferable to e-learning.
• **Is this within NISO’s scope?**
  Usage measurement and business information management are within NISO’s scope, however e-learning systems are outside of NISO’s present scope.

**Key External Factors:**

• **Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?**
  Because usage measurement is directly tied to the particular systems and their use, it might be difficult to transfer the knowledge from one environment (publishing) to another (e-learning systems). This project might be best undertaken by a group familiar with these systems and their inner workings.

• **What is the impact of this work item?**
  Assessment of academic systems is an area of increased interest. Without direct data from systems and their developments, it is difficult to assess their impact on learning outcomes or on the efficacy or wide-scale use of these systems. It is possible that internally generated information that is currently provided is suitable.

• **What other communities have an interest in this work item?**
  The systems providers in this space have an interest as do the academic and corporate providers of these services to their patrons.

• **Is there another organization that can take this on if NISO lets it go?**
  Yes, the IMS Global consortia could undertake this work. Also, the community of university systems administrators could also undertake this project if they were compelled to do so.

**Potential Next Steps:**

Given NISO’s lack of historical engagement in e-learning systems, engagement in this area should be measured, well considered and done in partnership with standards or best practice organizations already active in this space. The NISO Architecture Committee will be considering these recommendations during its meeting in Chicago.

**Recommendation #3: Develop a use case for a “learning dashboard” that accommodates FERPA restrictions.**

**Goal:**

• Support systems development that complies with national regulations on privacy and student information.

**Categorization**

Is this project focused on:

- [ ] Identification  
- [ ] Format  
- [ ] Structure  
- [ ] Transactions  
- [ ] Policy
Is this project mainly addressing the needs of:

- Users
- Organizations
- Services

Does this project connect to:

- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:

- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

**Key Internal Factors:**

- **Does this serve the businesses that are NISO members?**
  Only slightly. While libraries are a component of NISO’s membership, often the e-learning systems are not run by the library. The systems providers of e-learning systems are generally not a part of NISO’s membership. Additionally, the administrative offices and registrars who are primary holders of student data are not engaged in NISO.

- **Why would NISO take this on?**
  Assisting with compliance to government regulations also supports the interest of our community.

- **Is this an area of interest to the NISO community?**
  In large part, this would not be of interest to a majority of NISO’s members.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  NISO’s members have limited experience managing student records data or the FERPA guidelines – although some of NISO organizational members do deal with these issues regularly.

- **Is this within NISO's scope?**
  Developing policy best practice in conformance to federal regulations could be part of NISO’s scope, insofar as they relate to systems design and interchange. However, because of the ties to student records and other private data, particularly in systems that are only tangentially related to NISO’s activities, this project is likely out of scope for NISO.

**Key External Factors:**

- **Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?**
  NISO has not been engaged in student data and has no experience in these issues. It is likely that other organizations might be better to lead on this project.

- **What is the impact of this work item?**
  Given the widespread adoption of learning systems, one would hope that the federal requirements related to protection of student privacy are given reasonable attention.
However, the systems are widely adopted and there could concerns if privacy was not maintained.

- **What other communities have an interest in this work item?**
  The systems providers and the institutions that obtain these systems for their patrons would have interest. There is also a community of educators and collegiate administrators who are actively involved in privacy issues. There are also student advocacy groups as well.

- **Is there another organization that can take this on if NISO lets it go?**
  Several organizations are engaged in policy development regarding FERPA. Many universities provide FERPA training or compliance guides. Several national organizations related to university administration could address this issue: That National Association of College and University Attorneys, the American Association of Collegiate Registrars and Admissions Officers, the Council on Law in Higher Education and the Student Affairs Administrators in Higher Education. In many ways, these organizations are better placed to develop policy on these issues than NISO as a technical standards developer in the publishing industry.

**Potential Next Steps:**

Given NISO’s lack of historical engagement in e-learning systems, engagement in this area should be measured, well considered and done in partnership with standards or best practice organizations already active in this space. The NISO Architecture Committee will be considering these recommendations during its meeting in Chicago.
Research Data Thought Leaders Meeting

Recommendation #1: Survey and summarize successful data management and citation conventions for existing data repositories.

Goal:
- Document best practice in data management research paper in order to improve the understanding of existing data management and citation conventions in the community.

Categorization:

Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

Key Internal Factors:
- Does this serve the businesses that are NISO members?
  In part, libraries are developing their capacity for data management, so best practices will certainly impact them. The impact on publishers and the incorporation of research data in publication is just beginning.

- Why would NISO take this on?
  Increasingly, data sets collected by researchers are becoming critical to the exchange and advancement of science. Often the assessment of a conclusion presented cannot be fully vetted or tested without access to the underlying data. Increasingly many publications are beginning to include data, or links to it, with the published output. However, the community lacks permanent citation, identification, discovery, and data management policy standards.

- Is this an area of interest to the NISO community?
  Increasingly, yes, this topic is of interest to the community. The recent investments in data collection and management systems are one example of the increased attention researchers and institutions are paying to this field.
• What expertise is needed to create/update the work item, and does NISO have access to that expertise?
In some ways, the expertise of the library community on data management exists within the NISO community. However, the understanding of specific applications and the needs of the scholars in specific domains are not present within NISO. The systems management skills and the background development expertise in these fields are not naturally home within NISO, despite some overlap. It will make most sense to reach out to those systems specialist and domain experts to ensure that NISO’s work—if pursued—is broadly applicable.

• Is this within NISO’s scope?
Data citation is certainly within NISO’s scope. In particular, NISO’s works on the DOI as well as standards for publication citation are both directly applicable. However, the broader management of data has taken place outside of NISO’s community for decades.

Key External Factors:

• Is this a project that NISO should undertake, or is it more appropriate for another standards organization?
The current initiatives that are underway generally focus on either the scholars or the systems. Only a small portion of the overall projects engage the library communities, although they have the expertise is especially relevant to the success of long-term management, preservation and access to information. Similarly, the publishing industry is not engaged in these efforts. NISO could potentially help to engage its constituents in these efforts.

• What is the impact of this work item?
Research data will increasingly become critical to the scholarly process. It will likely become the foundation of much scientific literature and there will be a demand that access to it be provided a structured, well-documented, reasonably accessible, and permanently available form.

• What other communities have an interest in this work item?
The scholarly community is already actively engaged in these topics with many researchers, funding agencies, and organizations engaged. A broad swath of the scholarly and research communities is engaged. There has also been active engagement within the information science and technology communities.

• Is there another organization that can take this on if NISO lets it go?
Certainly, other organizations will foster their own citation and management practices. However, it is likely that these practices will be domain or project specific.

Potential Next Steps:

• Review ongoing related work: There is a great deal of work going on in the space of research data. Some examples include (but certainly not limited to): a variety of work funded by the JISC in the UK undertaken by the DISC-UK DataShare project, the Digital Curation Center, and the EDINA National Data Center; the NSF DataNet project; Dataverse Network Project at Harvard University; the DOE work on
integrating STTR & ICSTI; OCLC’s Trustworthy Repositories Audit & Certification: Criteria and Checklist (TRAC).

**Recommendation #2: Develop a thesaurus of terms relevant to data sharing.**

**Goal:**
- Improve the understanding of data reuse by establishing common terminology across the varied fields using data and repositories.

**Categorization:**

Is this project focused on:

- [x] Identification
- [O] Format
- [O] Structure
- [O] Transactions
- [O] Policy

Is this project mainly addressing the needs of:

- [O] Users
- [O] Organizations
- [O] Services

Does this project connect to:

- [O] People
- [O] Information Objects
- [O] Collections
- [O] Organizations
- [O] Services

This project falls under the scope of which Topic Committee:

- [O] Business Information
- [O] Content & Collection Management
- [O] Discovery to Delivery
- [O] Other

**Key Internal Factors:**

- **Does this serve the businesses that are NISO members?**
  In part, libraries are developing their capacity for data management, so best practices for common terminology will certainly assist them in their developments. The impact on publishers and the incorporation of research data into publication is still at its earliest stages.

- **Why would NISO take this on?**
  The lack of common terminology hinders exchange of information, particularly across disciplines. In a space where NISO’s experience is limited, a project with a limited scope such as this could be a modest start to engaging in a new area, short of large-scale investment.

- **Is this an area of interest to the NISO community?**
  Some members of the NISO community are actively engaged in the creation and management of large-scale datasets. One of NISO’s members is a recipient of the recently announced NSF DataNet grants and has expressed interest in engaging NISO on work of this sort. Other members are actively engaged in these issues and this work could support their activities.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  Almost by its nature the scope of this project would necessitate bringing in a diverse set of participants from different communities. NISO would need to turn to domain
experts in a variety of fields to ascertain their terminology for managing data to find commonalities across a range of fields.

- **Is this within NISO's scope?**
  Terminologies and best practices are within NISO’s traditional scope, however engaging in the space of data sets, and delving deeply into domain science uses of data and storage have not traditionally been part of NISO’s activities.

**Key External Factors:**

- **Is this a work project that NISO should undertake, or is it more appropriate for another standards organization?**
  At present, most of the standards setting that has taken place in the area of data sets and data management have taken place either at the systems levels or within domain-specific sectors of information distribution. In part, the strength of NISO’s engagement would be in bringing diverse interested parties together from the library, publishing, academic, and systems-vendor communities.

- **What is the impact of this work item?**
  There is a theme ongoing in the research data discussions regarding the organization, reuse and preservation of data. This work carries into the repository environment and the future role of libraries in this process. Engaging in best practices documentation can help to coalesce some of this work and propagate it in the community.

- **What other communities have an interest in this work item?**
  A variety of fields have interest in research data, primarily at the domain science level. Some aspects of this research would apply to the information science communities as well as libraries.

- **Is there another organization that can take this on if NISO lets it go?**
  Many organizations could take on this work, if they were motivated and interested. Most likely, however, would be domain-specific solutions that perhaps would extend to their neighboring fields.

**Potential Next Steps:**

The U.S. Department of Energy is undertaking a systematic review of their data resources and initial conversations have taken place about coordinating work on descriptions of data holdings and terminology. In addition, initial conversations with the NSF DataNet award winners on this topic have taken place. Finally, NISO has contacted NSF to discuss how such best practices development work might take place, but staffing changes at NSF have put these conversations on hold.

**Recommendation #3: Develop guidelines for data citation.**

**Goals:**

- Increase use of data in publications through reference building and citation.
- Encourage the sharing and reuse of research data through community sharing and through the recognition that citation and reference can bring to content.
Categorization:

Is this project focused on:
- Identification
- Format
- Structure
- Transactions
- Policy

Is this project mainly addressing the needs of:
- Users
- Organizations
- Services

Does this project connect to:
- People
- Information Objects
- Collections
- Organizations
- Services

This project falls under the scope of which Topic Committee:
- Business Information
- Content & Collection Management
- Discovery to Delivery
- Other

Key Internal Factors:

- **Does this serve the businesses that are NISO members?**
  In part, libraries are developing their capacity for data management, so best practices will certainly impact them. The impact on publishers and the incorporation of research data in publication is just beginning.

- **Why would NISO take this on?**
  As data and data sets become regular features of scientific output, it will become increasingly important to have common ways to cite and reference data.

- **Is this an area of interest to the NISO community?**
  Concerns about this topic are growing and suggestions that work be pursued in this area are gaining traction.

- **What expertise is needed to create/update the standard, and does NISO have access to that expertise?**
  NISO has a great deal of history working with both citation standards and for online location and discovery of information (especially with projects such as DOI, a NISO standard).

- **Is this within NISO's scope?**
  Although the application of citation measures to research data is relatively new, NISO has been working on development of standards in citation for decades.

Key External Factors:

- **Is this a standard that NISO should undertake, or is it more appropriate for another standards organization?**
  This project is quite well tied to NISO’s role in the community. There are other organizations, such as NFAIS which also conduct work on similar issues that could also be engaged.

- **What is the impact of this work item?**
  Citation is a critical component of scholarly exchange. As data is continuously made
more available, the need for consistent means of referencing and citing information becomes more and more important.

- **What other communities have an interest in this work item?**
  Those organizations with repositories, the community of developers of those projects and systems, as well as the end-users and scientists who deposit content in to research data repositories all could be interested in this activity.

- **Is there another organization that can take this on if NISO lets it go?**
  This work will eventually have to be undertaken by some organization, although it will likely take place in domain-specific fields if there is no centralized cross-disciplinary action taken by a neutral organization, such as NISO.

**Potential Next Steps:**

- Review ongoing related work: The OECD has produced a white paper on the citation of research data. There appears to be little consensus on the use of data citation forms or applications. NISO and OECD have had some conversations about pursuing this work within NISO’s structures.

- Longer term: It is very likely that the community will need at some point the establishment of a data collection identifier along with an associated metadata set to ensure that datasets are easily citable and reference-able. Furthermore, the exchange and discovery of data sets might be improved through the development of a central registry (or network of registries) of data sets.