

NISO Thought Leader Meeting on eLearning and Course Management Systems: Executive Summary with Recommendations

Report prepared by October Ivins, consultant and facilitator of the July 17, 2008 meeting.

Background and Goals

The National Information Standards Organization has been awarded a Mellon grant to conduct four thought leader meetings to incubate new standards activities during 2008. The topic for the third of these meetings was to identify areas where NISO can support e-learning and course management systems. Experts and leaders in several areas—course management and integrated library management systems executives, e-content providers, senior academic administrators including librarians, expert practitioners, representatives of related standards initiatives, and others met in Baltimore on July 17, 2008. The group was charged with considering several NISO options as well as standards, such as best practices, educational programs, and collaboration with or referral to another standards organization. The ideas and suggestions generated in the meeting will be provided to the NISO Architecture Committee for action.

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 are needed to ensure involvement of all relevant stakeholders.

Process and Handouts

Fourteen experts and leaders in several areas agreed to attend, and another two participated by sending suggestions and reviewing the draft report. On site participants represented course management and eLearning delivery systems (Connexions, eCollege, EduWorks, OpenCourseWare, SAKAI) and integrated library management systems (Sirsi/Dynix) executives, e-content providers (Cengage Learning), senior academic administrators including librarians (NYU, Penn State, Rice University, University of Kansas, University of Michigan, Utah State) expert practitioners, representatives of related standards initiatives (IMS Global Learning Consortium), and others (Copyright Clearance Center, Gartner Research, NITLE). Representatives from Blackboard and John Wiley and Sons provided responses in advance but were unable to attend the meeting. (Please note that the listing of multiple roles makes the total larger.)

Participants were asked to provide the three top problems or “points of pain” that presently limit the effectiveness of e-learning delivery and operation of course management systems. The resulting list of top problems organized into topics was distributed at the meeting. A document describing an ideal “collaboration management system” developed from a discussion of the meeting charge by the University of Kansas was also shared ([Appendix A](#)), as well as a gratis copy of a pertinent Gartner Research report¹.

The morning session was devoted to a full group discussion of the issues contributed in advance. For the afternoon session, participants separated into two groups to brainstorm about possible solutions to different sets of issues. For the final hour, the groups reported their recommendations, which were not prioritized.

The resulting recommendations were synthesized from the discussion. Details of the discussion are included in [Appendix B](#).

Recommendations

Technical interoperability

1. Do not approach technical and content interoperability by developing standardization. Instead, develop lightweight gateways that provide a standard framework to bring together multiple strands of metadata and content, and software supporting different functions. The best models to follow are OpenURL; Google Scholar search results display.
2. Recognize that standards alone will not be sufficient; they must be supported with social conventions of production or best practices.
3. Encourage solutions that move away from unsustainable locally developed solutions.

Content interoperability

1. Users want the ability to reuse, share and chunk information. While it is beyond NISO's scope to attempt to revise or impact copyright law, NISO could develop best practices for how content is used within the context of elearning systems, such as linking rather than copying content into the CMS.
2. Address concerns about trust (distrust of the available technology, agreements, exposure, public relations, privacy, etc.—see page 3 of discussion summary) by creating a very transparent process; recruit early adopters to test and encourage them to share their outcomes and experiences.
3. An alternative way to address trust concerns is to explore these issues and identify solutions in a white paper.
4. Develop standards for content integration from publisher/content provider to systems vendors that would improve access and reduce costs.
5. Develop standards for the rights expression language/semantics and its transmission. Expand from journal/book content to additional formats and sources of content, including learner and instructor generated.
6. Participate in the development of bibliographic metadata standards (including monitoring FRBR) to support the ready sharing of data and information.

Learner/Faculty Information

1. Explore standardizing additional types of user data: user profiles (what they know and don't know), length of time connected, performance.
2. Prepare white paper on intra-campus collaboration, need coordination between faculty, library, and IT as described in University of Kansas Environmental Model.
3. Prepare white paper on inter-campus coordination for research, sharing of course materials and syllabi.

Authentication and Privacy

1. Create best practice guidelines for learner, faculty privacy.
2. Explore credentialing function- will Shibboleth support the authentication and credentialing required for elearning and course management systems? If not, what else is needed and can NISO provide it?
3. Develop standards for user authentication at the publisher site rather than in the Course Management System to eliminate the "double charging issue" for content providers which result in increased costs for users and institutions.
4. Determine the desired impact of a digital identity—what impact it will have. This needs to be answered before other questions can be addressed. Work with the PESC: Postsecondary Electronic Standards Council (www.pesc.org). Contact Charles Leonhardt, Principal Technologist, Georgetown, chair of the Inter-Organizational Task Force to Advance Electronic Authentication and Authorization for Higher Education.

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Usage and Assessment

1. Investigate the feasibility of a COUNTER type system for elearning. What management issues need to be addressed? What metrics are valuable? Would standardization among different platform providers be useful? Would system outputs be compared in the way cross-publisher data is compared? Is any cross-institutional bench-marking done? Prepare white paper about data needs and analysis expectations.
2. Develop a use case for a "learning dashboard" that accommodates FERPA restrictions. (NISO can also encourage its members to lobby for changes to FERPA.)
3. Lead a data collection study to determine what regional college/unit accreditation agencies require and collect, with the goal of making data collection easier and more standardized.

Participants

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

**Appendix A:
e-Learning and Course Management Systems:
local meeting to discuss problem areas
where national standards might help
10:30-12:00, July 11, 2008**

Meeting Notes

Convener: Warner, Beth (IS/IT)

Attendees:

IDS: Zvacek, Susan Golick, Doug
Libraries: Bullington, Jeff Emde, Judith Ghouse, Nikhat Leon, Lars Mercer, Holly
IT: Hanrath, Scott
Instruction (IS): Glover, Kim

Others Invited:

CTE: Bernstein, Dan
Libraries: Church-Duran, Jennifer Ludwig, Deb Roach, Mary

The group was assembled to discuss issues, ideas, and local perspectives for input into the following:

NISO is convening a meeting of thought leaders to help identify problem areas where NISO can support e-learning and course management systems. We are seeking input from leaders in several areas—senior academic administrators including librarians, e-content providers, course management and integrated library management systems executives, expert practitioners, representatives of related standards initiatives, and others. Once the issues impeding progress are identified, we can set an agenda for appropriate responses for NISO, such as standards, best practices, and educational programs, or referral to another standards organization.

The discussion began centered on improving the current course management system (Blackboard) and ended with describing a much richer collaboration management space to address the way researchers and learners work today, in effect redefining the meaning of CMS.

Issues raised fell into several areas:

Recognize the need for systems to support more transparent collaboration spaces

- Emphasize collaboration aspects of groups, whether classes, research teams, or work groups
- Boundaries between research and instruction are getting more and more blurred
- Need to better integrate and support undergraduate research
- Boundaries between research materials and teaching materials blurring
- Better ability to “bury” the current systems within broader collaboration frameworks

Tools: The need for better, more standard, transparent, and interoperable tools / gadgets that allow people to focus on the task rather than the tool.

- More and better tools to foster collaboration, both within and between current systems
- Portability of tools
- Better assessment tools: unobtrusive, better feedback

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- Better ways to provide real-time feedback to instructors and students
- More efficient workflows, with notifications to others, for setting up course environments
 - Simple web-based menu of choices to allow instructor to design course then pick tools, content, rosters, etc. to automatically create the course / collaboration environment
 - Notifications to library department liaisons when course set up for:
 - Reference support for class assignments
 - Course materials needed (e-reserves, course guides, etc.)
 - Library instruction session(s)
 - Notifications to Instructional Development & Support (IDS)
 - Faculty / TA training needs, support issues
 - Planning for re-activating, archiving courses

Better ways to promote and provide training / support / coaching for instructors

- More visibility for good ideas on how to approach instruction, alternatives for approaches, models to build on

Authentication / Authorization / Role Support:

- Need better way for let resources automatically follow the person as their role changes, i.e.:
 - Across courses
 - From researcher to instructor and back
 - From student to alumni
- Need better way to allow access and collaboration between institutions
 - Cross- institution classes
 - Faculty collaboration on development and sharing of learning materials / objects
 - Shibboleth, etc.

Issue of how to foster innovation while balancing with standardization

Infrastructure needs to:

- be stable, robust
- be accessible
- support accessibility and usability
- support portability
- support more transparent authentication / SSO / credentialing

Repository support:

- Needs to support all types of external and/or repositories for many types of objects
 - Reusable learning objects – stewardship, ownership issues
 - Ephemeral items
 - Archiving issues, how to address ongoing preservation and stewardship issues
 - Virtual and personal repositories
- Descriptive / administrative / technical metadata (without turning faculty into catalogers...)

Content

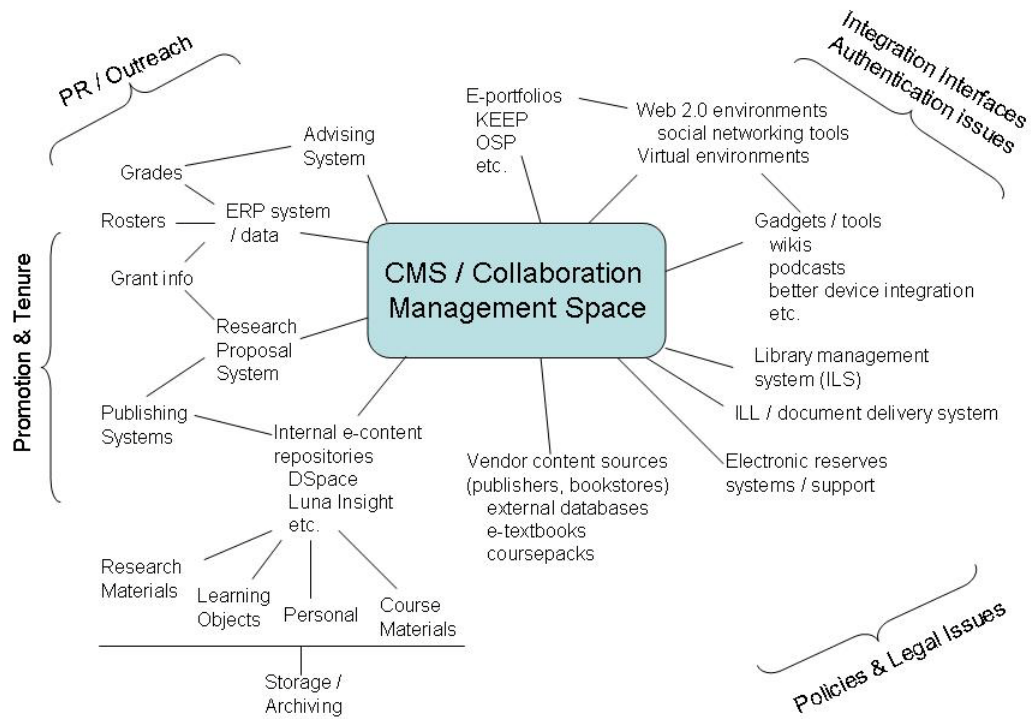
- Address issues of reusable data, objects, metadata
- Remove copyright barriers to easily use content in courses
 - Make it more efficient, especially for faculty to deal with
- Make it easier to avoid content bundling issues of paying multiple times for content

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Better, more consistent implementation of existing standards

- SCORM
- Descriptive / administrative / technical metadata import and export

Diagram of envisioned systems / related aspects to create this collaboration space:



University of Kansas – CMS Environment Model

Draft – July 11, 2008

Group adjourned feeling we had a better shared understanding of campus needs and a better framework within which to move forward over the long term.

**Appendix B:
NISO Thought Leader Meeting on eLearning and
Course Management Systems
Discussion Notes from the July 17, 2008 Meeting**

The morning session was devoted to a full group discussion of the issues contributed in advance. For the afternoon session, participants were separated into two groups to brainstorm about possible solutions to different sets of issues. For the final hour, the groups reported their recommendations, which were not prioritized

Discussion Summary: Interoperability

The topic mentioned most frequently by the respondents was Interoperability, but that covered such a huge range of sub-topics clarification about NISO's community and scope was requested. The executive director noted that NISO represents publishers, libraries at academic institutions, and systems providers. The general focus is on learning, education, and research but may be broadened for specific projects.

The group agreed that "interoperability" covers at least these three areas, which are discussed in more detail later in the document:

- Technical operability
- Content operability (reuse, share, chunk)
- Learner information (e-portfolios, etc. Things that describe what the learner does or doesn't know, and standardizing those rubrics; could also include usage time, performance, etc.)

Other key themes emerged:

Ownership and Copyright: The content in CMS systems has varied origins, raising issues of ownership (does the faculty own it? the publishers? Is it licensed?)

For content, users want to reuse copyrighted materials. Right now it is limited to a course or a specific site license. If I want to share it more broadly, how can I do that? And how can I adapt it? Later we agreed that copyright is not something NISO can resolve; all players must follow copyright law and policies which will be influenced more by negotiations and lawsuits, such as between Google and publishers; publishers and libraries, etc

The area of rights to digital content is complex and not static. Experiments are underway with new license types, international licensing, direct deals with publishers, fair use, corporate deals, etc. There have to be ways to integrate information about rights already owned so that content isn't constantly being repurchased. Also, there is no central usage data. Can you use a specific piece of content in your own CMS—there is no way for faculty to see that right now.

The whole workflow stream of notifications between systems and the CMS is a problem (faculty don't care where the content is coming from or who is licensing; they just want to provide it). Scanning, licensing, ownership, etc.—these are not CMS issues, but they impact the use of content in CMSs.

Intra-campus collaboration: There are issues about poor or non-existent coordination on campuses between faculty, library, IT, and the many different tools in use (for example, multiple wikis). Faculty and students want seamless access to all of their materials—personal, research, class related, etc. Warner from the University of Kansas shared a document generated in a meeting called to provide input to our meeting ([Appendix A](#)). This exercise "began centered on improving the current course management system and ended with describing a richer

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collaboration management space to address the ways researchers and learners work today, in effect redefining the meaning of CMS.” The group supported the need for development of a Collaboration Management System.

Inter-campus collaboration: Proprietary course management systems are seen as making it more difficult to share syllabi and other course materials across multiple institutions. For example see the site David Silver maintains: the Resource Center for Cyberculture Studies (<http://rccs.usfca.edu/>). Consider, too, inter-institutional research grants and implications thereof. There are many other needs for sharing information between campuses.

University/ Industry collaboration: It is also important to share information beyond academic communities for research and development and other cooperative projects among universities and commercial or non-academic institutions. Sharing information with publisher repositories is one example. This also ties to portability of data, and the ability to identify the right data to share.

New Functionality: New functionality is needed, to generate objective information. These topics also raise privacy issues.

- Faculty need information about students-how are they doing, what learning preferences do they have, what works best?
- Administrators need information on the teachers for assessment and to improve efficacy.
- Faculty and librarians need the ability to assess the efficacy of content.

Another need is for the right container—e.g., to have e-portfolios move with the student into their next career; for faculty to move from institution to institution.

Standardization vs. Gateway: The two types of possible solutions are standardization or development of a gateway. Standardization is much more cumbersome; what is needed is a lightweight gateway. (For example, not that ISO obliterated TCP/IP as a protocol since ISO is so lightweight and readily deployed). When the information is coming from different sources, there needs to be standard framework on which to bring those strands together. And to make certain that the many different variables are being looked at; but there is no way to pull those together now.

Metadata and Digitizing: There are many implications for metadata to support the ready sharing of bibliographic data and information. We should consider FRBR requirements – how much data can be passed?

Specific Concerns for the Learning Process: The Learning process is messy. They are pathways more than distinct lines. As educational publishers, when you take those raw assets and drop them into a CMS—that pathway gets disconnected. So we are looking constantly for a way to retain that user experience. When it gets translated through the other interfaces, which may make sure that the student takes a single proscribed path (A-B-C) and then marks a number to rate it... the user selected pathway is lost.

We’re trying to make the movement seamless, but we want to move the content and use and pull it as part of the learning process. This gets to the “interoperability of *learning*”. The content itself is just one small piece of that (it can be packaged and dropped, but that’s not the same experience). This is distinct from issues of interoperability for structural strategists. From a vendor point of view, providing the experience of a personal learning path—that experience—is a market and competitive advantage. A suggested reference is My Math Lab (<http://www.mymathlab.com/>)

Trust Concerns: The issue of trust was seen as critical one that NISO could address. People (institutions) don’t want to give up control of content; are wary to have it hosted elsewhere. Where does the distrust lie? Distrust of the technology available, the agreements, exposure, public relations, privacy, etc. Every institution is different and has their own perspective based on their own experience. Also, even though most large campuses have legal staff, the small ones don’t. A larger level of mistrust, fear as a result.

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There is also an aspect of “not invented here” and local IT groups wanting to maintain turf. The retirement of baby boomers creates an opportunity for universities to reconsider their reliance on locally developed solutions. We can't afford to duplicate efforts.

The solution needs to be light, simple, and inexpensive. Institutions want to trust, but need a way to do it. Two ways to lower distrust were suggested. One is to create a very transparent process and to recruit early adopters and encourage them to share their outcomes and experiences.

Types of Solutions: In our business, there are lots of immature applications and implementations. If we could pick one topic with the biggest downstream effect—what would that be? More to the point—not only the most downstream impact, but what can the people in this room actually do? We are not going to do anything about copyright. Who knows what's going to happen there? It's going to be largely determined by Google working with the publishers. Every decision we make locks us in, making things very hard to change. So it's not even moving between CMSs, but within them. How are we going to manage the next release? Content, usage, usability, etc.

Perhaps OMPL—the standard for pulling together RSS feeds (collections of feeds, between, for instance different readers)—provides a model. We need not just standards, but packages of standards *and* social conventions of production.

Possible Outcomes

- Develop Gateways to shared/discreet repositories; other applications—provide three or four examples, like Google Scholar displays
- Lightweight standards (as opposed to monolithic)
- Modularization (not integration)
- API (or similar) development

Discussion Summary: Authentication and Privacy; Usage, Assessment

This section reports on an hour long discussion involving the whole group of participants. After this discussion, we broke for lunch.

It is too early to tell how widespread adoption of Shibboleth will be. Some expect only the 100 largest institutions will use it, but NITLE is working to make it usable by small colleges. OpenID is that everyone else in the world (for instance, Google and Yahoo) will use. It is too limited for our purposes since it only does authorization, not authentication; there is no credentialing function. You can sign up by whatever name you want. Students already have accounts on MySpace, Facebook etc. Now universities expect them to create a university account to access materials. We need to find a way to allow them to use their own accounts.

This is a direction Creative Commons Plus was taking before Larry Lessig moved on; we should monitor progress there. There are also companies creating platforms that can pull in individual accounts; publishers are trying to offer this service, to allow an account created in one place to be used in many. Another example is the work Mark Bide, Rightscom, is doing with digital assets management systems to allow machine interpretable policy expression. The ACAP project applies this concept to search engines. The Rights expression language piece is important; what's the key the user needs to get into that. And if the key involves payment, we might be back at the double payment issue.

Problems with tracking logins, multiple ones for many different applications. How can a user get from one to another without logging out and in again? A counter perspective is that logging in perhaps should present a barrier to entry. Many users find the ability to use different e-mail accounts for different needs is a benefit. (Please refer again to the University of Kansas – CMS Environment Model which also describes this environment.)

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Universities now want content integration in the BlackBoard CMS (for example) but in order to achieve that now, publishers have to incur additional costs, and create an additional channel to their existing relationships with institutions and faculty. There are other inefficiencies in the model: not everyone will use the textbook, but everyone has to buy it.

Multiple publishers in an open platform in an iTunes-like model is game-changing, and does change the copyright, access issues that we've been discussing. If you put the distribution so discrete, this shifts the work back onto the professor, which nobody wants.

But we can't not move. We have to pick a horse—we need to say “This is where we think things are going, this is where we think we might move” and work on the standards for that. Perhaps use scenario mapping, with an 18 month timeline.

Let's address the double charging issue. The double charging is that the institution pays for the CMS functionality and for the content. But then the institution is also charged back-end fees (basically, fees that the publishers have to pay for additional functionality to add the content, beyond the fee of the content itself).

A solution could include an authorization piece. When someone goes to access a piece of protected material, the CMS would then refer the user to the publisher site. If the publisher is then doing the authorization instead of Blackboard, does that get rid of the fee? Yes. So if the school can say for each content instance, where it gets authorized, would that work? Faculty want to get to the library model where we really don't care about specifics—as long as the user has been OK'd by the institution, they can get access. Will Shibboleth accomplish this?

We also need to consider broader access for students; something beyond course specific access, which would include prior and related courses, something more like an “educational cycle” model of access.

How about moving the e-portfolio concept higher up the chain and allow a different level of access? This could also support a shift from “assessive” to reflective learning. It would also create a shift in the business model, that the price of the content has additional properties.

But keep in mind that the model for elearning in corporations is moving in the opposite direction. The course is a unit paid for by a student, a cartridge that contains the entire course and associated content; there is no aggregation among courses. So in this model, the publisher collects \$70 and the other intermediaries collect the other half? Publishers are experimenting with digital content rental programs to bring student costs down. What many would find preferable is embedded content links that would link out to the publisher's content. This also allows pretesting and lets faculty monitor at risk students.

The WebCT system supports much of this, with usage data and reporting on the length of time students and faculty are logged in, how many questions faculty answer; correlations of student activity time with grades, and so forth. Some faculty like these features, others have withdrawn. We need usage standards too—are it numbers of clicks, minutes spent logged in, etc.

Higher educational privacy requirements are less strict than those for K-12 (Family Educational Rights and Privacy Act) but these must be considered. Perhaps a good role for NISO would be developing and lobbying for best practices to comply with FERPA? We would want to comply with the ADA and WC3 accessibility requirements as well. There are some guidelines for K-12 compliance (SIFA); we should look for others.

It seems we would be developing standards for an application that doesn't exist yet. We could start with a list of what we want reported. Establish baseline requirements of data to be fed to campus warehouses; a basic set of elements for student analytics. What data would be returned from a CMS launch? Could we link this to rubrics for course outcomes?

Recommendations

For the afternoon session, participants worked as two groups to explore recommendations for the two groups of topics explored in the morning session.

Actions: Interoperability

The interoperability group began with the list of possible solutions generated earlier and explored them in more depth.

Possible Outcomes

- Develop Gateways to shared/discreet repositories; other applications—provide three or four examples, like Google Scholar displays
- Lightweight standards (as opposed to monolithic)
- Modularization (not integration)
- API (or similar) development

They developed these general themes that are very wide and open.

- Google & its representation of information becoming de facto presentation of search results
- Roles (role-based presentation)
- Portals that are based around roles & definitions
- Filtering and the process of creating filters on the institution side and how to tie them to the databases and authentication
- Authentication
- Studying scholars and studying their workflows

They noted that there is a lot of work already going on in these areas. It is important for NISO to get more engaged, e.g., with IMS Global's learning tools and interoperability group.

It is likely that NISO can't really do anything independently, but must work with two large players: Google and the content management systems.

NISO can develop a use case for learning dashboard that accommodates FERPA restrictions and lobbies to change them as needed.

One key goal is to determine the desired impact of a digital identity—what impact it will have. This needs to be answered before other questions can be addressed. The PESC: Postsecondary Electronic Standards Council (www.pesc.org) is doing a lot in this area. Charlie Leonhardt is the contact; he's Principal Technologist at Georgetown. NISO needs to work with this group as well.

Actions: Authentication, Privacy, Usage, and Assessment

This group had an easier charge and came up with a long list of activities it felt were appropriate for NISO. The group did not attempt to prioritize the recommendations, but felt the Architecture Committee would have the appropriate experience to make those determinations.

1. Establish shared assumptions for 2 years out
 - Increased concerns about privacy
 - More systems to interact with
 - Greater need for meaningful data
 - More content and more kinds of content (user generated)

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2. Consider three states; input, throughput and output
 - Focus on identifying data collected at input and output. Throughput must match up to derive.
 - Input governors- need for user control in profile setting
 - Levels of authentication; completeness
 - Can I control what is reported about me
 - Transparency of profile
 - Anonymization
 - Non-repudiation
 - Throughput to create standardized output is opportunity for vendors
 - Consider both data and the associated metadata about the student/user
3. Use cases
 - Learning dashboard – provost asks to compare 1 yr class of engineering students to prior class
 - Accrediting agency wants demonstrations of learning; now can offer transcripts only
 - Vendor use case – generate learning outcomes that could be used in Consumer Reports type ratings and assessments; agree on outcomes and best practices; what types of data would be important for pricing, for ex.
 - Document need for investment (by Congress, etc.); what makes a difference in student retention; graduate in 4 years
4. Study what discipline accreditation agencies collect/require
 - Study what regional college/unit accreditation agencies collect/require
5. Eportfolios-- for student entire educational cycle, perhaps beyond.
 - Example – teaching emergency triage, competencies definitions
 - Evidence to map to competencies
 - Assessment of evidence
 - What data is needed?
6. Don't reinvent wheel; identify and engage other standards bodies and agencies working on same topics
7. Privacy – develops best practices for compliance with FERPA; map to tool set
8. Accessibility; 508 is not just web and software but digital content; develop best practices for compliance

Concluding Comments

At the conclusion of the second reporting out summary, the Managing Director asked what things, out of the lists, are feasible? The second group responded that they thought at least half of theirs were.

The participants also noted that although Metadata & Identity which weren't really discussed today but that were highlighted as areas in the pre-meeting poll, these and others on that list are also likely to be areas/places where it NISO could play a role.

ⁱ *Hype Cycle for Higher Education, 2007*. Gartner Research, July 11, 2007. ID Number G00148910.