How (and Why) to Listen to Heavy Metal

Participating in Standards Development Lets Higher Education Control its Destiny

Whether it’s a jazz combo or a heavy-metal band, music is much more than a group of individuals playing their own thing in the same space. In fact, short of a performance piece, such a musical experience would likely drive listeners screaming from the concert hall. Instead, each musician works with other musicians to produce a seamless and transparent musical experience that brings together a set of individual tones, notes, and chords in a perfect, harmonic blend.

In the learning market space, there are countless individuals creating the tones, notes, and chords that are the learning materials, objects, tools, practices, and systems. Individually, they’re the building blocks for and sometimes even solutions to a single problem or a single course. Until they’re joined together, however, their usefulness is limited; alone, they’ll never achieve the status of a completed composition.

At the NLII annual meeting, a featured session titled, “How (and Why) to Listen to ‘Heavy Metal’: IMS, OKI, and other Standards and Specifications Projects” (http://www.educause.edu/asp/doclib/abstract.asp?ID=NLI0312) a group of specification development specialists first discussed the need for faculty, staff, content and courseware developers, and instructional designer, to get involved in the development of standards and strategies and then described strategies that would facilitate participation. “The best music is made not when individuals play alone,” said Ed Walker, director of the Instructional Management Systems (IMS) project (http://www.imsproject.org). “It happens when a group is jamming together.”

Specifications and standards that facilitate the long-term usefulness of instructional technology and interoperability across institutions worldwide are essential to the future of teaching and learning in the digital age. They should capture and sometimes facilitate practice, but they should not determine it. “There are standard ways of describing
practices that allow standards makers to influence those processes,” said Walker, “and we need to use that notation.”

The notation is simply a way for faculty and instructional technology staff to communicate with standards developers. According to panelists at the Heavy Metal session, there are two areas that need to be coordinated: data structures and behaviors. “The data structures came first, and the behaviors are the next challenge,” said Jeff Merriman of the Open Knowledge Initiative (OKI) (http://web.mit.edu/oki/), which is coordinating behaviors. “We have the nouns,” said Merriman. “Now we need the verbs.”

OKI, which began as an initiative between Stanford (http://www.stanford.edu/) and Massachusetts Institute of Technology (http://www.mit.edu/) to facilitate resource sharing by writing to an open standard for software interoperability, has been working on ways to prevent changes in one part of a complex technological system from affecting the other parts. With that in place, educators can focus on education-related problems rather than on having to deal with “the seamy underbelly of interoperability,” said Merriman. It is often thought of as a service-based architecture, wherein the service could be authentication, data warehousing, or other specific aspects of data sharing. “In the future,” said Merriman, “instead of simply having the ability to share data, we could share applications and implementations.” And like music, the notation of interoperability in instructional technology will become invisible over time—like musical notations once you’ve learned them. “No one asks, ‘How did you come up with those staffs and rests?’” said Merriman.

What makes standards useful? Consider the memory challenges associated with new information systems. Today a student may have 10 or 15 passwords to remember, which makes a service like Shibboleth—a system for interinstitutional user authentication—particularly useful. In the biblical story from which the name is derived, individuals who gave the incorrect passwords were beheaded. “That’s not our policy,” said the project’s Ken Klingenstein, who describes this Intranet2 middleware initiative (http://shibboleth.internet2.edu/) as the “plywood” of building the higher education
A workshop on the concept of heavy-metal jamming titled, “How to Listen to Heavy Metal” (http://www.educause.edu/asp/doclib/abstract.asp?ID=NLI0336) drilled down deeper into the specification process and illuminated a number of reasons faculty and instructional software specialists should make the effort to become informed about standards and specifications and how to find avenues for influencing the process. IMS cofounder Steve Griffin explained the specification life cycle and where higher education fits in, and he discussed why higher education’s opinion counts. With a membership list that reads like a who’s who of today’s top information technology companies, IMS has mastered the art of listening to its members. “Silence allows other perspectives to dominate,” Griffin said. “If you’re silent, corporate needs will dominate and you won’t see variability.” In addition, higher education has the expertise to guide the development of standards and specifications that will serve the educational mission. “Vendors are looking to higher education to cast the light forward,” Griffin said. “They want to meet the needs of customers.”

The IMS has a sophisticated system for listening to its constituents, thereby making it simpler for educators and instructional designers to enter its world. There are general meetings, special Internet group meetings, white papers and surveys, and a fully developed online presence. “We want to help communities express their opinions,” said Griffin.

In addition to service on the IMS board, the NLII is involved with the following phases of specification and standards development to help make that linkage between the toolmakers and the tool users:

1. The requirements analysis phase: By serving on the IMS Technical Board; by sponsoring or planning efforts and events that involve all of the stakeholders—
including, among others, teachers and learners, content providers and learning providers, technology vendors, software developers, policy makers, administrators, and researchers—in the requirements collection phase; by participating in the development of use cases (see sidebar); and by providing professional development opportunities for members with regard to the standard methods and formats for requirements analysis. For example, see the NLII 2003 Spring Focus Session (http://www.educause.edu/nlii/meetings/nlii032/), an event designed to collect requirements for the design of next-generation course management systems.

2. The **specification writing and review phase**: By attempting to keep its membership informed about IMS specification development activities, by encouraging active participation by its members, and by reviewing specifications as part of the Technical Board voting member responsibilities.

3. The **implementation phase**: By keeping its membership informed about new specifications and encouraging testing and adoption. The NLII publishes a quarterly update on technical standards and specification projects in the learning materials and software market. Check out the new key themes page on http://www.educause.edu/nlii/keythemes/standards.asp, and the Specification and Standards Organizations table. (See http://www.educause.edu/nlii/keythemes/standards_table.doc for more information.)

4. The **feedback phase**: By providing forums for feedback from the tool users to the toolmakers. In addition to face-to-face events, the NLII actively sponsors virtual communities of practice wherein toolmakers and tool users can interact during all phases of specification and standards development.

5. For examples, see the Virtual Communities of Practice (VCOP) Initiative page (http://www.educause.edu/vcop)—in particular, the E-Pac (electronic portfolios) and Learning Objects VCOPs.

The NLII also provides leadership for IMS special interest groups (SIGs) in key development areas; for example, NLII 2003 fellow Darren Cambridge is currently serving as chair of the Electronic Portfolios SIG.
What’s the Use of Use Cases?

As Ed Walker says, there are “standard ways of describing practices that allow standards makers to influence those processes, and we need to use that notation.” One such methodology is the use case. As Steve Griffin says, “A use case is a description of some activity, usually involving a person and a computer system or between two or more systems. Use cases can be informal—such as simple narrative descriptions—or very formal, such as those used in software engineering. IMS uses use cases to help capture information about the context, activity, and requirements involved in an area of specification development.”

The NLII is working to translate features and functional requirements issues and needs that have been identified at NLII focus sessions—such as e-portfolios and course management systems—into standard formats such as use cases that can be immediately applied in IMS specification work. The purpose of this effort is to improve the responsiveness of e-learning software to higher education needs in the context of learner-centered design principles. Results of this work will be submitted to the new IMS Use Case Forum, which has been set up to solicit use cases from the public that will aid IMS in the areas of chartering and specification development, as well as to various IMS Special Interest Groups. For more information, select Use Cases and Priorities at http://www.imsglobal.org/developers/ims/imsforum/.

Share and Share Alike

Open source development continues to be a mainstay of higher education technology development. In the concurrent session titled, “A Model for Successful Open Source Development in Higher Education” (http://www.educause.edu/asp/conf/function.asp?PRODUCT_CODE=NLII031/SESS03&MEETING=nlii031) Carl W. Jacobson of the University of Delaware (http://www.udel.edu/) examined the uPortal project (http://www.udel.edu/uPortal) as a model for open source software development. “Portals are important because they model the ways our future students will be working,” said Jacobson. “It’s not your student body you should be targeting; it’s the students who will be coming in four years.” Those students, says Jacobson, will want technologies that
are always on, capable of multitasking, capable of operating on multiple devices, personalized, and consolidated.

The key principle behind open source involves sharing your efforts when the goals are the same. Pooling effort makes it possible to access expertise ("The best minds don’t always work for you," said Jacobson) and to create influence ("If 40 institutions go to the department of higher education or Blackboard or Microsoft, they listen"). Colleen Carmean, NLII 2002 fellow, calls this "the authority of consensus."

One of the keys to uPortal’s success has been commercializing it from the start. This enabled it to become self-supporting in three years as stipulated in its Mellon grant. By commercializing long-term support services, uPortal has been able to widen its customer base, allow people to buy different scales of service, and ensure the development plan.