New Horizons

By James L. Hilton

Digital Asset Management Systems

I have seen the digital promised land. Well, *seen* is perhaps too strong a word, but I have at least glimpsed it. The sighting happened while I was touring CNN's digital newsroom with the University of Michigan's vice-president for communications. She was interested in finding tools that her news and information group could use to capture campus events and to then package them for distribution through traditional and digital channels. To be sure, there were plenty of things in that glowing cave that caught her eye, but there were more that caught mine.

I saw that newsroom through the eyes of a professor. In my professorial role, I crave easy access to multimedia material and the tools that can make that material "sing and dance" in my classes. I long for applications that can change the way I do research and the questions I ask in the lab. What I saw at CNN was a room full of possibility on both of these fronts. Video clips, photographs, and text were wrapped in a deep metadata structure that was fully searchable, editable, and accessible through browser-enabled tools. I realized that with these tools, I could immerse my students in a world of multimedia that has substance, as opposed to a world of multimedia that is merely eye candy. With these tools, I could find just the right snippet of video to frame a controversial point. With these tools, I could help students prepare projects that could finally rise above the pedestrian—and too often plagiarized—term paper. In short, with these tools, I could change my classroom in dramatic ways.

These tools could also change the way research is done by making material easier to search and accessible beyond its physical boundaries. Imagine, for example, what ethnomusicologists could do with these tools. Ethnomusicologists typically spend years in the field collecting video and audio samples of music, dance, and ritual. The successful ones end up with box after box of audio tapes, video tapes, and field notes that are typically kept in their offices or homes. Despite this humble storage, these materials form the very core of the discipline. Today, all of these materials have to be sorted by hand, and comparisons typically take weeks to make. But imagine a system in which the materials are digitized, submitted to speech- and facial-recognition software, and placed in a coherent metadata structure. Searches and comparisons could then be done in a matter of minutes, making new questions relatively easy to explore. Equally important, because the tools are all Web-enabled, the materials could be searched by anyone who has permission. Physical access would no longer be a barrier. The boundaries of the lab could extend to the world.

This apparition was, of course, heady stuff. The tools that we saw at CNN spoke to the rich possibilities that digital asset management systems hold for scholars at all levels. At the moment, these systems are not mature enough for widespread deployment. They tend to be too narrowly confined to a specific industry (i.e., television news) and a specific media (i.e., video). But as they mature, they have the potential to address at least four key problems that face institutions of higher learning: (1) asset mining; (2) automation; (3) intellectual property; and (4) engagement.

Asset mining. Certainly one of the most challenging problems facing colleges and universities is how to keep track of the material that is available to the campus community. The library at the University of Michigan has a catalogue of over seven million volumes, yet that number grossly underestimates the intellectual holdings available across the campus. It does not include, for example, the materials that our ethnomusicologists collect, or the simulations that our physicists program, or the hyperlinked multimedia analyses that our humanists create. Nor does it include the thousands of talks and seminars that are held each year on campus and that we either fail to capture or lose in the mix. An asset management system that could work with highly organized systems like the library's, and with more idiosyncratic systems developed by individual researchers, could go a long way toward elevating the resources already available.

Automation. Although one problem involves finding material that is available, a second problem stems from not having digital access to the material in the first place. In part, this is because much material exists in analog form; converting it to a digital format is both labor- and skill-intensive. But those obstacles are declining. Current video-, audio-, and text-ingestion tools are able to automate much of the process. Perhaps nowhere is this more apparent than in the world of video. In a matter of seconds, a video stream can be digitized, analyzed for speech and facial recognition, and key-framed in ways that allow users to find where something was said, where someone appeared, or where something significant happened. Add to this automation the migration of

digital equipment to the consumer/commodity market, and the barriers for capturing and digitizing events go down significantly.

Intellectual property. Once an asset is digitized and placed in a framework that allows it to be found, a user still needs to know about the intellectual property conditions that surround it. Is this an asset that the college/university owns? Is it an asset that has been licensed through the library? If so, who can use it and under what conditions? Here the point is not digital rights management in ways that the Motion Picture Association of America, the Recording Industry Association of America, and Microsoft think about rights management. They, at least for the moment, seem to be concerned largely with developing the tools and infrastructure needed to support pay-per-view access. Rather, the point is that a user wants to know the source of the material, the conditions under which it was created, and the uses that are allowed with and without permission. Too often, for example, faculty members create fabulous projects that can never be shared

beyond the bounds of their own classrooms because the projects were created under fair use assumptions, which make few provisions for external distribution.

Engagement. Because asset management systems lie somewhere between traditional repositories, digital archives, and production systems, they have the potential to serve both the academic and the business/communication needs of the institution. An effective asset management system could go a long way toward bridging the gap that exists between the sometimes esoteric world of advanced research and the knowledge-hungry public. By providing access to common digital widgets, an asset management system should facilitate communication between scholars, media relations professionals, and the world at large. Put another way, in the digital promised land, not only would teaching and research improve, but the community at large would better understand the accomplishments and value of the academy.

How soon digital asset management systems will begin to populate the halls of academia is an open question. In their

current form, there are several significant barriers to adoption. First, there is territory. Because asset management systems lie somewhere between traditional repositories, digital archives, and production systems, many stakeholders will need to collaborate in the deployment of an asset management system. Second, although the tools are getting easier to use, they need to be even easier. A successful campus-wide deployment of software that faculty and students can use must have a learning curve on a par with that of today's browsers and presentation software. Third, digital asset management systems will push the limits of whatever infrastructure is in place. These are systems that are hungry for bandwidth and storage. Although there are many parameters, digitizing one hundred hours of video at the desired resolutions could consume as much as eight terabytes of storage. The good news, of course, is that storage and bandwidth are increasing exponentially. The bad news is that they still are not free. They will continue to require significant planning and investment.

I have a friend who predicts that building a digital asset management system into the infrastructure—a system that allows searches, customization, and editing from the desktop—will be the digital equivalent of bringing indoor plumbing to the campus. It will change, in fairly fundamental ways, how the academy goes about its day-to-day activities and how effectively the academy communicates those activities to the broader society. I think he is right. At the University of Michigan, we have begun working with private-sector partners to create a digital asset management "living laboratory." This laboratory will be a place where, on a small scale, students, faculty, and staff can use these tools to see how they like them and to see how the infrastructure responds. The goal is to learn enough about the technology and practices to be in a position to respond to the demand as it materializes. When we reach the digital promised land, we need to be ready.

James L. Hilton is a professor of psychology and Associate Provost for Academic, Information, and Instructional Technology Affairs at the University of Michigan.