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CAMPUS TECHNOLOGY
Empowering the World of Higher Education

August 2011

CT Forum
NEW EVENT!
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CLOSED CAPTIONING FOR UNIVERSAL ACCESS p. 16

TECHNOLOGY ALL-STARS

MEET OUR 2011 CT INNOVATORS p. 32

Pepperdine University's IT governance team joins the Innovator ranks, along with nine other winning projects.

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KISS Me, Please

At InfoComm 2011, simplicity characterized the new products for higher ed. Thank goodness for that.

I confess that education technology got away from me for a while. About 23 years to be precise. At the risk of betraying myself as a wizened old coot, when I last edited an ed tech magazine, educators were all dewy-eyed about the Apple IIe.

Congratulations to all of this year's Innovators award winners for showing just what a difference technology can make in higher education.

So you can imagine my relief at InfoComm in June, when vendors repeatedly talked about the simplicity of their products. I think I actually hugged one man.

To compete in the higher education market, vendors are realizing that their products must *facilitate* the learning process—not be a learning exercise in and of themselves. Again and again, everyone from projector manufacturers to digital signage exponents touted the plug-and-play aspects of their wares. The technology may be complex, they argued, but the user interface is assuredly not.

When you think about it, my hiatus from education technology made me a perfect guinea pig for the A/V products on display at InfoComm. In my early days here at *CT*, I'm not much different from thousands of faculty members at campuses nationwide who may be mystified by the rapidly evolving technology options available to them. However, my job is to stay on top of the technology learning curve. Faculty, on the other hand, enter the world of academia to pursue their own passions and research—and, hopefully, to teach. We have no right to expect them to fiddle around with connectors, switches, and complex interfaces. They want products that are as easy to use as their TVs, because they want to do their *own* work.

But the drive for simplicity now reaches beyond the lecture hall. As state budget cuts cleave a path of destruction through higher education, IT departments are laying off employees and cutting back on training. They need products to be simple as well, because their overworked staffs simply don't have the time—or the expertise, in some cases—for anything more complex.

That's probably why networking was such a recurrent theme at the conference. For embattled tech and facilities departments, the ability to easily control and monitor the performance of equipment across campus from a central location is priceless: It requires fewer employees, and permits savings in energy, maintenance, and replacement parts. Simplicity works.

When I first became involved in education technology, many educators believed students would need to learn programming to survive in a 21st century world. As technology has improved, however, the interfaces have become ever simpler—in fact, the programming is not even visible to the average user.

If faculty—and higher education in general—are to use technology to its fullest potential on campus, this trend toward simplicity must continue. To put it another way, vendors are going to have to pucker up and KISS: Keep it simple and straightforward. **CT**

—Andrew Barbour, Executive Editor
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Adding an electronic retention policy to your university's standard business routines helps manage student documents and puts more focus on the tasks that drive your organization forward.

Enhance Teaching With Unlimited Access to McGraw-Hill Content
MH Campus was sold to more than 100 schools before it was launched. Find out why leaders from **Ohio University**, **Indiana State University**, and **Mount Wachusett Community College** (MA) are so passionate about the program.

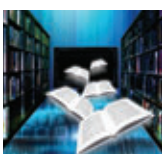
Providing 21st Century Tools for 21st Century Student Services
Texas Tech's Jim Anderson reveals ways technology can maximize service and engagement throughout the student lifecycle while minimizing costs and resources.

Trending Articles on *CT*

- **Is the iPad Ready to Replace the Printed Textbook?**
  campustechnology.com/0811_ipad
- **Is Higher Education Ready for "The Education Bubble"?**
  campustechnology.com/0811_bubble
- **The Problem of "Pedagogy" in a Web 2.0 Era**
  campustechnology.com/0811_pedagogy

Viewpoint

E-Text: Is It Ready? Are We Ready?
Large-scale e-text implementation may still be out of reach for higher education institutions.
campustechnology.com/viewpoint



Features

The Future of Blackboard
Gartner researcher Marti Harris provides her perspective on the Blackboard acquisition and what it means for the company and its customers.
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Aug 7 - 12
The Data Warehousing Institute
TDWI World Conference
tdwi.org
San Diego

Sep 27 - 29
Campus Technology Forum
campustechnology.com/ctforum
Long Beach, CA

Oct 2 - 5
League for Innovation in the Community College
2011 STEMtech Conference
league.org/stemtech
Indianapolis

Oct 18 - 21
Educause 2011
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Philadelphia

Oct 23 - 26
National Association of College Auxiliary Services
2011 NACAS Annual Conference
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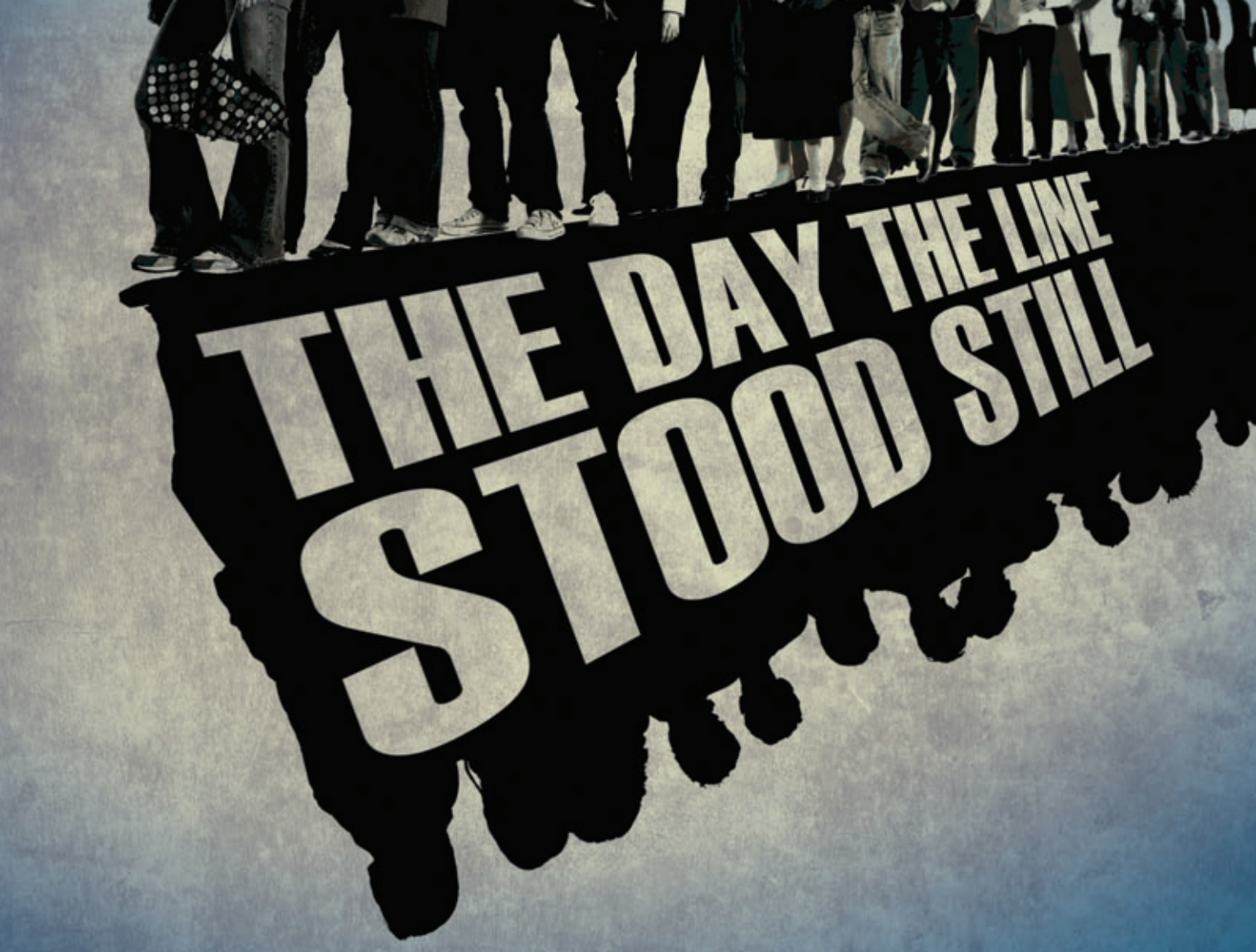

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TECHNOLOGY HAPPENINGS IN HIGHER EDUCATION

NEWS

ACCESSIBILITY COMPLIANCE. **California State University** has automated accessibility monitoring to ensure that its thousands of websites and millions of web pages are ready for use by faculty, students, and staff who are visually impaired, deaf, or hard of hearing. The university selected HiSoftware Compliance Sheriff to provide validation, remediation, and ongoing monitoring of the university's websites for compliance with Section 508 and Web Content Accessibility Guidelines (WCAG) 2.0. HiSoftware worked with a group of CSU students to develop the CSU HiSoftware Implementation Plan, which includes standard testing requirements, wide tool deployment, and training.

OPENING DOORS. In a new partnership, the Community College Consortium for Open Educational Resources (CCCOER) will now be able to tap into the collection of open textbook resources compiled by the international group of institutions that make up the OpenCourseWare Consortium (OCW Consortium), and vice versa. As part of the arrangement, CCCOER, which represents 200 schools, has become an associate consortia member of OCW Consortium, and its advisory board will effectively act as a voice for the two-year colleges within the global consortium's organization. The goal of both groups is to raise awareness of open educational resources, including textbooks, video curricula, and other materials. "Open educational resources and open courseware can be leveraged to enhance the quality and delivery of courses, increase access for learners, and reduce the essential cost of curriculum materials," says Judy Baker, dean of technology and innovation at the **Foothill-De Anza Community College District** (CA), where CCCOER was established in 2007.

LIGHTS ON. **Upper Iowa University** is implementing a new emergency feature that will light up escape routes in the event of a crisis. The school has signed a deal with Lightstep Technologies to install Stairfinder, an "intelligent evacuation system" that illuminates building escape routes and can even redirect evacuees depending on the type and location of the emergency. Safe routes are lighted in green; unsafe routes are marked with red X's. The lights are visible even in smoke-filled environments. Read more at *campustechnology.com/articles/2011/05/31/upper-iowa-u-to-install-intelligent-emergency-lighting-system.aspx*.

AT UPPER IOWA University, a new "intelligent" emergency lighting system guides evacuees to the nearest escape route.

EXTRA HELP ONLINE. LMS provider Blackboard and K12, which delivers online courses to schools and individual students, have teamed up to deliver Blackboard Developmental Education, a new service to help students through developmental mathematics. Currently, several community colleges and four-year institutions, including the **University of Kentucky**, **Baton Rouge Community College** (LA), and **Ivy Tech Community College** (IN), have committed to the pilot effort. The pilot will provide online courses, including live instruction, delivered by Blackboard. The course offerings are expected to complement or replace curriculum for specific areas of study. K12's role is to provide materials, teaching, and counseling capabilities. Read more at *campustechnology.com/articles/2011/06/21/blackboard-k12-pilot-developmental-math-program.aspx*.

A COMBINED EFFORT. **Rio Salado College** (AZ) is working with the *New York Times*' Knowledge Network to develop a national online post-baccalaureate teacher-preparation program. The new offering is designed for people who already have a bachelor's degree and want to earn a teaching certificate for elementary, secondary, or special education. Courses will be taught by Rio Salado faculty and supported by the Knowledge Network's Epsilen LMS. The LMS features course management, access to the *New York Times* content repository, and collaboration functions: blogs, wikis, forums, private student groups, and chats. Read more at *campustechnology.com/articles/2011/06/21/rio-salado-college-works-with-new-york-times-system-to-deliver-teacher-training.aspx*.

RESEARCH CLOUD. With the goal of improving access to academic computing and technology resources for Japanese researchers, **Hokkaido University** (Japan) has implemented a supercomputer system that powers a new research cloud. The school is using CloudStack, an open source cloud platform from US-based Cloud.com, as infrastructure as a service in a virtual environment that runs on Citrix XenServer. The new setup allows a user to provision, manage, and operate IT resources from a unified portal. On the hardware side, the


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university is running a Hitachi SR16000 multiprocessor supercomputer, Compute Blade 2000 blade server, and Modular Storage 2000 disk array. Hitachi did the cloud integration work.

STREAMLINED DIGITAL MEDIA. Canada's **University of Ottawa** has begun using a new IP-based system from Haivision Network Video to deliver reserve materials from its media library to classrooms. The primary goals of the project are to eliminate reservation problems, reduce VHS/DVD use, replace legacy systems, address copyright issues, encourage the transition to digital media, and reduce future costs. A pilot during the 2010-2011 academic year tested the setup in five rooms simultaneously to gauge network reliability. The campus expects to have the system deployed and delivered bilingually (in English and French) in all classrooms by 2012. The following year, the university hopes to offer video on-demand as a regular service and to have video assets linked to the library catalog.

CLASS VIA iPAD. **Kaplan University** (multiple locations) has released KU Campus, an iOS-native iPad app that allows students to attend class through the mobile device. With the new app, students can access archived lectures, course materials, activities, syllabi, and other information. Flexibility is critical for Kaplan's student population, most of whom are working adults or have families to care for. Fifty-five percent of Kaplan students are older than 30, and 88 percent take courses online.

Courtesy of Apple

SLOW GROWTH IN SPENDING. Worldwide spending on services related to IT increased modestly last year following a sharp dip in 2009, according to a recent report from Gartner. Growth in education spending in this category, however, was the slowest of all sectors. The report, "Market Share Analysis: IT Services, Worldwide, 2010," covered end-user spending on all forms of IT services, including software and hardware support, process management, consulting, development, and integration. Overall, worldwide spending on these services totaled $793 billion in 2010, up 3.1 percent from 2009.

VIRTUALLY ANYWHERE. **Indiana University** is launching an initiative called "IUAnyWare" to provide cloud-based services to faculty and students. Citrix's XenDesktop—the same software used in campus computing labs—will deliver software and storage to students, faculty, and staff. Microsoft will provide technology for localized cloud storage. The service will support traditional operating systems such as Mac OS X and Windows systems, as well as tablets and smartphones. The multiphase initiative will eventually support more than 100,000 users. "This project is part of a major initiative to rethink the way we are delivering IT services to all of our users, and to be able to reduce desktop support needs and deploy those resources to more strategic initiatives," explains Sue Workman, associate vice president of support at the university.

MOBILE SECURITY. **West Texas A&M University** recently implemented e2Campus' uTip, a security system that allows faculty members and students to text campus safety officials about crimes and emergencies in real time. "uTip instantly turns thousands of cell phones into crime-prevention agents," says James Webb, CIO at West Texas A&M. uTip pricing starts at $195 a year for schools with a campus population of 5,000 or less.

WEST TEXAS A&M students can use uTip to text school officials about crimes on campus.

VISUALIZING SOFTWARE. Graduate students in **DePaul University**'s (IL) College of Computing and Digital Media are learning how to prototype applications before they're developed, with the aid of a visualization application called iRise from a company of the same name. The project comes out of an iRise campus program that provides software licenses and sample curricula for eligible students and instructors. Using iRise, 200 students in a human-computer interaction program can preview the basic interface and operations of an application to be developed. They then videotape user tests and use that feedback to create a more detailed version of the simulation. **CT**

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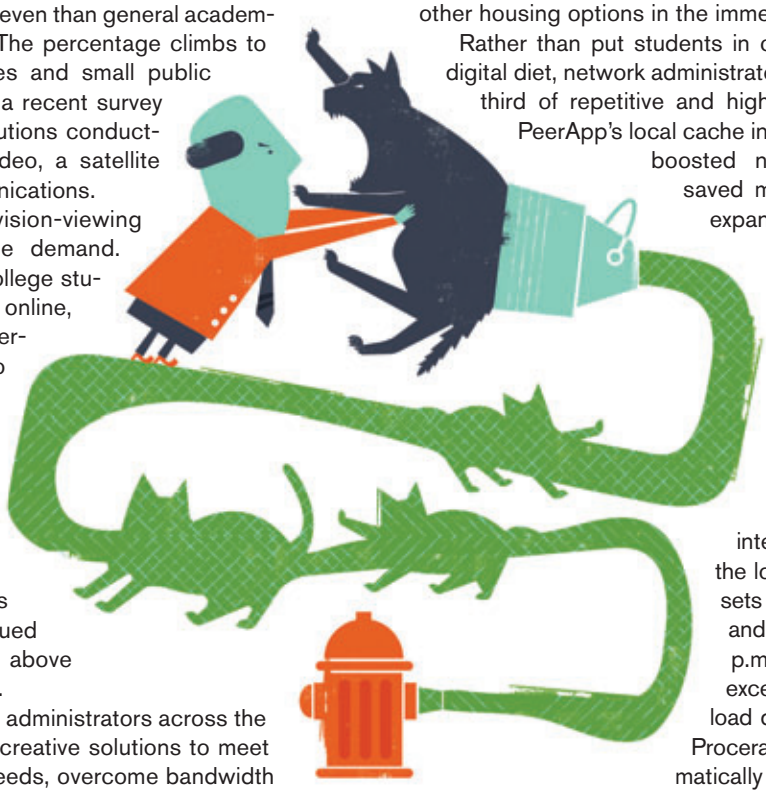
Squeezing Cats Through the Pipe

As students' digital entertainment takes up more bandwidth on campus, institutions look for cost-effective, scalable solutions.

CATS PLAYING THE PIANO, the latest Hollywood flick, sitcoms on Hulu—you name it. On campuses nationwide, streaming video is taking bigger and bigger bites of bandwidth, feeding students' ravenous demand for digital entertainment and leading to network congestion.

On average, a quarter of campus bandwidth is devoted to external video, more even than general academics or online gaming. The percentage climbs to half at private colleges and small public schools, according to a recent survey of 221 four-year institutions conducted by Campus Televideo, a satellite provider of telecommunications.

Changes in television-viewing habits are fueling the demand. More than a third of college students watch television online, and almost half are interested in watching video online exclusively, suggests a spring survey by Student Monitor, a market research firm. Indeed, a **Washington State University** survey conducted a few years ago found students valued good network service above operational bathrooms.



In response, ResNet administrators across the country are turning to creative solutions to meet student connectivity needs, overcome bandwidth challenges, support multiple kinds of devices, and combat illegal file sharing.

Offering such services is necessary to attract and retain residents, according to higher ed officials, and that means matching or exceeding high-speed internet services available off campus.

"We need to offer an equivalent experience to what you would get living at home," says Ben Price, director of residential information systems and technology at the **University of California, Santa Barbara**. "There are plenty of other housing options in the immediate area."

Rather than put students in campus housing on a digital diet, network administrators at UCSB shifted a third of repetitive and high-bandwidth traffic to PeerApp's local cache in May 2009. The move boosted network speeds and saved money by slowing the expansion of the pipe.

"Users don't have to transit the broader internet to get each piece of content," explains Price. "It's much faster."

Streaming video accounts for half of residential traffic traveling through UCSB's internet link. To manage the load, the university also sets peak (1 p.m. to 1 a.m.) and nonpeak (1 a.m. to 1 p.m.) hours. If users exceed 1.5 GB of download during peak hours, the Procera packet-shaper automatically slows down their speed to 512k for 24 hours. Well aware of the consequences, students alter their usage accordingly. Traffic on the network spikes at 1 a.m., when students schedule downloads.

Shaw Nielsen

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According to Price, UCSB's residential pipe will widen from 650 Mbps to 800 Mbps this fall, at a lower renegotiated cost. And bandwidth will continue to grow as the university expands its accommodations, from 7,500 to 12,000 students in the next decade.

SUNY BROCKPORT students can opt to pay $50 per month for additional bandwidth.

Help Desk Pressure

While streaming video and file sharing tax network capacity at colleges, the sheer proliferation of devices—gaming consoles, iPods, tablets, smartphones, laptops, and desktop computers—is also putting greater demands on campus help desks. Fourteen percent of college students have wireless reading devices such as Kindles, and more than half own smartphones, according to Student Monitor. And these tech-dependent users expect universities and colleges to support their devices.

To help meet demand, WSU launched a pilot program in spring 2010, hiring students to serve as resident technology assistants. In collaboration with network administrators and residence staff, the team tested Cisco's network access control systems with various devices, and wrote instructions on how to connect devices and solve problems with different antivirus products.

Residents were encouraged to contact their hall's technology assistant for immediate help with connection problems. These assistants received help desk tickets, held office hours, and passed issues they couldn't resolve to the university's central help desk.

"We felt good about the result," says Craig Howard, director of WSU's administrative services information systems. "Throughout the year, students worked hard to build better resources, materials, and educational programs."

The program expanded to every residence hall in the 2010-11 school year, with one technology assistant assigned to every 300 students. Success can be measured by the drop-off in wait times. In 2009, during the opening week of school, the line at the IT desk stretched into the hallway, with waits ranging from an hour to 90 minutes, recalls Howard. The following year, with the resident technology assistant program in place, no more than three or four people were ever waiting in line.

Money Matters

Whether you're increasing the size of the pipe or augmenting your help desk, it still all costs money. WSU, which made wireless networking ubiquitous across residence halls and added bandwidth in "big gulps," considered charging heavy bandwidth users for higher allocations. It abandoned the idea, however, when faced with the expense of installing the necessary infrastructure. For now, the residential networking services are included in the room fee. And, for many schools, this appears to be the favored option.

A WSU survey conducted a few years ago found students valued good network service above operational bathrooms.

The **College at Brockport** (part of the **State University of New York**) is taking a different approach. While students at UCSB suffer a slowdown in service if they hog too much of the pipe, students at SUNY Brockport can simply pony up more cash: For an additional $50 each month, students can boost their basic data package of 5 Mbps to 15 Mbps. Nevertheless, the vast majority of students stick with the basic plan, says Shannon Sauro, director of telecommunications and business processes.

Since 2006, SUNY Brockport has outsourced its ResNet services to Apogee, saving an estimated $300,000 annually in staffing and infrastructure that would have been needed to serve the 2,700 students in campus housing. Apogee set up server rooms; deployed core routing and switching equipment and wiring for high-speed internet, cable TV, and

RESOURCES

For links to the products and vendors mentioned in this article, go to *campustechnology.com/0811_resnet*.

IPTV; and established wall-to-wall wireless coverage. In addition, the company provides help-desk services through its call center and technician on campus.

Illegal Downloading

Apogee also deals with copyright infringements on the network, another important aspect of managing digital entertainment. The reauthorization of the Higher Education Act requires colleges and universities to quell unauthorized distribution of copyrighted materials by users of their networks. Enforcement of the new requirements began last year.

Illegal file sharing of copyrighted material has fallen from its peak about four years ago—when half of students admitted to doing so—after high-profile copyright battles by the Recording Industry Association of America and the Motion Picture Association of America.

But the problem persists. In the spring semester, 35 percent of students across the country downloaded music illegally and 16 percent downloaded movies illegally, according to the Student Monitor survey.

To discourage peer-to-peer file sharing, WSU sets it as low priority on its network, slowing downloads and uploads of bandwidth-hogging, potentially copyrighted video and music. "Not all P2P is illegal, but a whole lot of it is," says Howard.

In the fall semester at SUNY Brockport, Apogee provides students with information about copyright law and the risks of infringement, and outlines legal options such as purchasing music and videos from iTunes and Amazon. Typically, copyright holders are the primary monitors of illegal file-sharing websites. When they identify a potential violation, they send a notification of copyright infringement to Apogee, which notifies the school and works with officials to enforce disciplinary measures.

At SUNY Brockport, students receive two warnings. On the third violation, internet service is suspended for three days. After four or more violations, internet service is suspended for seven days for each notification received.

Violations have fallen year over year, and from fall to spring semesters, as students learn the rules. In the 2009-10 school year, there were 145 incidents in the fall and 81 in the spring; in the 2010-11 school year, there were 116 in the fall and 57 in the spring.

"We want to educate our students about doing the right thing, in a safe environment," Sauro says. "When they get out from under the Brockport wing, the penalties are much harsher. If students know it's wrong, we don't want them to think they're getting away with it." CT

Vanessa Hua *is a freelance writer based in Claremont, CA.*

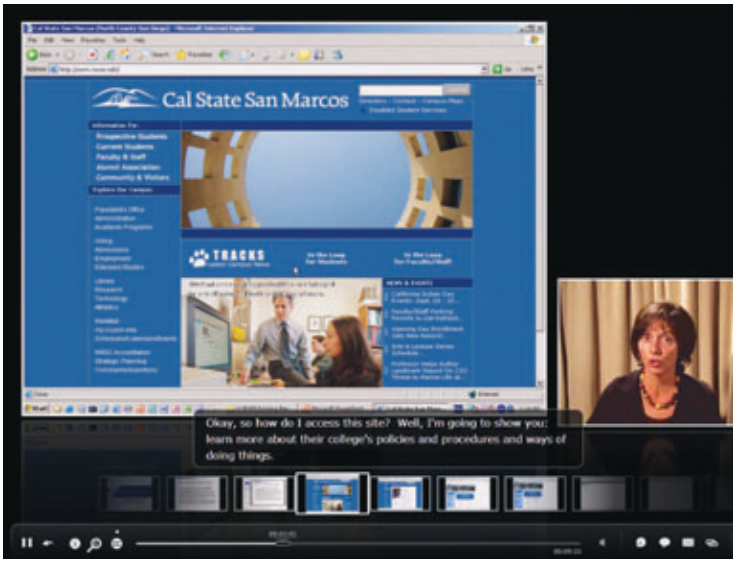
Getting Your Lines Right

As lecture capture and distance learning take hold in higher ed, colleges pursue different approaches to the issue of closed captioning and transcription.

THE RAPID GROWTH of lecture capture and distance education in higher ed is raising fresh concerns about accessibility, since it's difficult—if not impossible—for hearing-impaired students to use these tools effectively. As a result, many colleges and universities are renewing their focus on closed captioning as a viable solution.

While the impetus for closed captioning stems from a desire to accommodate students with hearing issues, schools are also discovering that closed captioning has broader appeal, particularly among students for whom English is a second language. And for the rest of the students on campus, there's one other big benefit: It allows them to search captured content quickly, by enabling keyword searches (see "The Search Side Effect," page 18).

The holy grail of closed captioning, of course, is a turnkey system that automatically transcribes audio with 100 percent fidelity. Speech-to-text applications, like Dragon Dictate, have been used in education for many decades, but they're mostly applications for personal use, calibrated to the user's speaking voice. Can speech-to-text systems work seamlessly in an environment where a variety of speakers' voices need to be accurately and quickly transcribed?



Courtesy of Sonic Foundry

Closing in on Automation

George Mason University (VA) believes the answer is yes. The school, whose population comprises an increasing number of students with disabilities—including veterans who are deaf or hard of hearing—already uses remote Communication Access Realtime Translation (CART) services in the classroom. This technology allows a deaf or hearing-impaired person to use a password and username to log onto the web and view a real-time text translation of what's being said in class. (The system requires a trained operator at a remote location to provide manual transcription.)

Now, the university is looking to replace that system with a more automated solution. It recently approved a "caption proposal" that will allow faculty to upload their files and have them captioned quickly.

"We're going to be a multimedia capturing service right here in our office," says Kara Zirkle, IT accessibility coordinator and head of the school's Assistive Technology Initiative. Her team will use the Docsoft:AV audio/video search and closed captioning system. In use at the school for a few years, the server-based technology includes an integrated voice-recognition system.

Although George Mason's closed-captioning procedures are still under development, Zirkle envisions a time when faculty members will simply upload their captured

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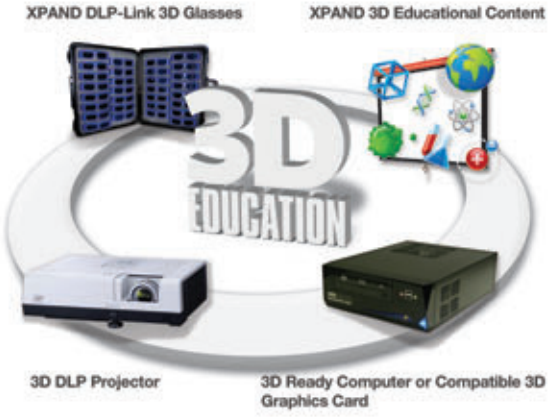

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lectures to a server. Then, using voice-recognition capabilities, the software will create a time-stamped transcription. "For a one-hour video, the system can produce a transcript within 45 minutes," asserts Zirkle.

Just how accurate the closed captioning will be remains to be seen. "It will really depend on the audio quality, the speaker's accent, and other variables," says Zirkle. As a result, George Mason isn't quite ready to trust the entire captioning process to automation. Once transcribed, the file will be opened in Docsoft Transcript Editor, where student workers will edit the transcript and clean up the text to match the video. "This allows us to have a clean, time-stamped transcript that can be played in Windows Media Player or other preferred players," explains Zirkle.

In the long run, Zirkle believes her school's IT-centric approach will prove more affordable than using an outside service or graduate students to handle the bulk of the work. "The one-time purchase fee for Docsoft is much more economical than spending the minimum $150 for a single instance of CART services in the classroom," she says.

The cost factor is certainly an argument that resonates with **Oklahoma State University**. A new state law requiring that all videos be captioned left the school with a difficult choice: Either dramatically cut down on the number of videos it produced, or find an automated captioning solution. Like George Mason, it opted for the solution offered by Docsoft. As the school moves to implement classroom capture, it expects to expand the system's use even further.

Not everyone feels speech-to-text technology is ready for educational prime time, though. "Having incorrect words in the closed captioning can have a profound impact in the educational setting, where accuracy is crucial," says Robert Wyatt, director of distance learning at **Western Kentucky University**, which uses a combination of Tegrity's lecture capture software and student transcriptionists to get the job done.

"We picked the software based on its lecture capture capabilities, and *then* we started adding closed captioning to all of our lectures," says Wyatt. Before captured lectures are broadcast, a team of 10 students (who each work 20 hours per week) listens to the materials and transcribes them.

Wyatt feels the system is a cost-effective way to get the university's lectures translated into text that hearing-impaired students can utilize. "It's not very expensive, and it takes about twice the time of the real lecture to get it done," he says. "Not only are we ensuring better accuracy than any speech-recognition program can provide, but we're also helping 10 students pay for their education."

"Having incorrect words in the closed captioning can have a profound impact in the educational setting, where accuracy is crucial." *—Robert Wyatt, Western Kentucky University*

A Hybrid Solution

The majority of schools appear to be taking approaches similar to Western Kentucky's, utilizing systems that meld technology and good old human effort. At many of these institutions, though, the goal is to make the process so simple that it *appears* to be automated.

At **Penn State University**'s College of Art and Architecture, for example, faculty capture video and lectures, and then simply upload them to 3Play Media's online transcription, captioning, and interactive-transcript service.

"We upload our videos and they come back transcribed within a day or two," says Keith Bailey, director of the college's e-Learning Institute, which has been using the system for about a year.

Once the transcribed files are returned, an instructional designer retrieves the embedded code from 3Play Media's server and "drops it" into the course content. "When students view the video, the course, or other multimedia, they can just hit the 'closed captioned' button and download the transcript—all without much effort," explains Bailey. (Penn State's media-asset management system earned a 2011 Campus Technology Innovators award; see page 43.)

Gallaudet University, a school for deaf and hearing-impaired students in Washington, DC, is pursuing a similar tack. Earl Parks, Jr., executive

THE SEARCH SIDE EFFECT

THE BENEFITS OF closed captioning for hearing-impaired students are obvious. But it's also proving to have real value for the entire campus community, by enabling better search capabilities. Using products such as Echo360, Sonic Foundry's Mediasite, and McGraw-Hill's Tegrity, for example, students can skip to any part of a professor's oral presentation via keyword search—they no longer need to wade through the entire thing or rely on a search of accompanying lecture notes or a PowerPoint presentation.

"The content's value is definitely limited unless it can be both transcribed *and* searchable," says Tole Khesin of 3Play Media in Cambridge, MA. "Using closed captioning, students can jump to any specific part of a video to find what they need."

director of Gallaudet Technology Services (and who is deaf himself), worked with Echo360, the school's lecture capture provider, to hone the product to include features that enable a seamless transcribing process.

Gallaudet currently has 11 classrooms equipped with Echo360, and two self-service lecture capture studios where faculty and students create learning objects, video-based projects, and online lectures for distance-learning courses. The captured content is made accessible through the school's Blackboard LMS (via a URL that is automatically assigned). If a teacher wants a transcript and closed captioning for any content, he can request it at the push of a button.

RESOURCES

For links to the products and vendors mentioned in this article, visit *campustechnology.com/0811_caption.*

That's when the setup's manual component kicks in. "The file is sent out to transcription services, which do the work and put the content back where it belongs without us having to get involved," explains Parks.

Ironically, Gallaudet may have less need for closed captioning than most other schools. A high percentage of its lectures are held in American Sign Language, with no audio at all. "We're kind of in a catch-22 situation here," says Parks. "In many cases, for us to caption our content, we first have to interpret it and then send it off for transcription. Because of that, most of our lectures are *not* captioned."

Nevertheless, Parks sees closed captioning as an important process for all colleges. The benefits, he says, extend to students for whom English is a second language, and even university courses that include difficult terms and verbiage.

"Closed captioning is really about universal access, and universities need to keep this in mind as they set up their systems."

—Earl Parks, Jr., Gallaudet University

"Closed captioning is really about universal access, and universities need to keep this in mind as they set up their systems," notes Parks. "Making the process seamless is also critical, so that deaf and hard-of-hearing students don't stand out and feel as if they're being focused on. They want to feel that they're part of the learning environment." **CT**

Bridget McCrea *is a freelance writer in Clearwater, FL.*

How does your institution handle closed captioning for captured lectures? E-mail us at editors@campustechnology.com.

Firewalls and Filtering Tools

Social media and mobile devices are forcing major changes in how institutions protect their networks. And the battle is only getting started.

UNTIL RECENTLY, INTERNET security was like a castle with a moat: a crude perimeter to keep out attackers and other threats. Gatekeepers could generally tell friend from foe, although they could certainly be fooled.

With the advent of web 2.0 applications and the proliferation of mobile devices, however, internet security has had to evolve rapidly. For higher ed institutions, customization has become an increasingly important aspect of security suites. Firewall and filtering tools must now be flexible enough to serve the varied needs of students, faculty, staff, and guests—while also addressing emerging security threats on mobile devices.

Matt Daley

"In the old days, firewalls were binary—allow or not allow," says Brian Contos, director of global security strategy and risk management at McAfee, an internet security provider. "Now, it's a lot more like clay than Legos."

Take Facebook, for example. The site is a conduit to hundreds of applications ranging from games to networking, with access points for music and entertainment services. Rather than block Facebook entirely, Contos says, schools may want to target specific apps that open the network up to malware or put a strain on network resources, degrading bandwidth and slowing e-mail.

Indeed, social networking sites provide rich pickings for cybercriminals. In 2010, an ingenious ruse involved shortened URLs. Although these abbreviated URLs are commonly used to link to legitimate web addresses, hackers posted millions of these shortened links on networking sites as part of phishing and malware attacks, according to a recent report by Symantec, an internet security provider.

The attackers used the news-feed capabilities of popular social networking sites to distribute the attacks en masse. By logging onto a compromised account and posting a shortened link to a malicious website, the hackers spread the link to the victim's friends within minutes. The attack was by no means a rare event. Last year, 65 percent of malicious links in news feeds monitored by Symantec used shortened URLs. Of these, 73 percent were clicked 11 times or more, while 33 percent received between 11 and 50 clicks.

To fight against such threats, internet security vendors analyze billions of files, e-mails, and malware to

categorize and determine their "reputation" in the cloud, and automatically update the firewall and filters of their customers in response.

Security vs. Access

Schools must balance the need to protect their networks from intrusions, malicious code, and spam e-mail, while still giving their users the freedom to participate in wikis, YouTube, Facebook, Twitter, and other social networking and content-sharing sites.

To that end, experts say, IT staffers should pursue security solutions that allow them to set policies for different groups—faculty, students, and staff—with granular, rather than wholesale, restrictions.

"The goal is to give students an internet life similar to what they could expect in a private apartment with an internet connection from a local ISP," says Seth Shestack, associate director of information security at **Temple University** in Philadelphia. "We block illegal file-sharing traffic and very little else."

Ideally, schools should also be able to review and grant access to sites on the forbidden list, if students or researchers petition why they need the information. "These tools have the flexibility to give teachers and administrators the ability to override blocked content," says Mike Maxwell, head of state, local, and education public sector issues at Symantec.

For administrative systems at Temple, though, the security bar is set higher. "We don't allow in outside traffic other than what is dictated by absolute business needs," comments Shestack.

Temple takes a multilayered security approach, with various control points inside and outside its Check Point enterprise-level firewall, including Blue Coat PacketShaper and IBM's intrusion-prevention system. Every computer within the university network also runs Symantec's internet security solution, which includes an antivirus engine and desktop firewall that checks the health of the PC.

Students living in residence halls who connect their own computers to the network must run the Symantec product, provided by Temple, which buys the licenses. Regardless of whatever security protections are installed on student devices, wireless access for students is limited to commodity internet, such as web surfing and e-mail—functions that are kept separate from the university's confidential, proprietary data.

The Mobile Threat

Unfortunately, the use of mobile devices to access university networks is becoming a major security headache—and a problem that is only expected to get worse during the next year. On campuses today, IT administrators are contending with a multitude of personal devices—smartphones, tablet computers, and more—used to access sensitive information such as grades, healthcare, and payroll.

"How can organizations rein in devices they don't control?" asks Lenny Zeltser, who leads the security consulting team at Savvis, which provides managed computing and network-infrastructure solutions.

The general consensus is that mobile devices are vulnerable. Mobile system architecture "hasn't benefited from being battlefield tested for years and years, which is the case with desktop operating systems," explains Zeltser. "When attackers focus on the mobile platform, they get a lot of bang for their buck."

For example, hackers have unleashed malware on phones that allow them to charge for calls that were never made and text messages that were never sent. In the last year, the threats have become more sophisticated, as social media spread to phones and botnets allow the rapid infection of users' entire contact lists.

"Mobile devices are a natural extension of the campus network," says Gerhard Eschelbeck, chief technology officer at Webroot, an internet security provider. While the threat to colleges and universities remains in the early stages, "the bad guys are working on it."

According to Eschelbeck, schools must have complete coverage on the gateway side, with filtering on inbound traffic. In addition, he advises schools to consider a mandate that security solutions reside on all mobile devices.

Such recommendations come with their own issues: Does the onus for compliance rest with device owners or should the institution purchase licenses to issue users? "It's a difficult challenge, and there's been a lot of discussion," says Temple's Shestack.

Temple is developing its own expertise in mobile security through its academic computing center, which launched a TUmobile app this past spring for BlackBerry, Android, and iPhone platforms. For now, functionality is limited to nonproprietary information, such as the shuttle bus schedule, the events page, and athletic schedule; eventually, students

continued on page 46

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Rather than block Facebook entirely, schools may want to target specific apps that put a strain on network resources.

10 KEYS TO THE PORTAL

Successful web portals help campus users stay informed, in touch, and up to speed. They are also a telling window into the efficiency of your institution.

By Dian Schaffhauser

JAMES JOYCE WROTE that a man's errors "are the portals of discovery." Take a quick tour of college portals and you'll realize that many schools have taken him at his word: The errors are front and center, and finding what you want ranks as a true discovery. Indeed, on campus portals across the land, the list of crimes against UI (user interface) is depressingly long: static columns of interminable hyperlinks, critical components buried in forgotten recesses, and navigation so flawed that it would have had Lindbergh touching down in Paris, Texas. ▸

Eva Vázquez

It's not the message your institution wants to portray. A portal is the primary point of contact between the institution and its students, faculty, and staff—they all rely on it to provide them with information critical to their role on campus. And, at the end of the day, your portal is a direct reflection of how efficiently and effectively your institution operates.

To develop a cutting-edge portal takes planning, communication, and research. *CT* talked to four schools that redesigned their portals to bring them into line with their institutional missions and strategic goals. Here are their 10 keys to portal success.

Even when your portal team members believe that they know what's going to drive traffic, make them come up with a plan B.

Key #1: Make Critical Info Visible

In 2004, when **Arizona State University** developed its mission as "one university in many places," it could have been referring to its portals. At that time, the website had nearly a million individual pages. Trying to find a resource was like searching for the proverbial needle in a haystack. Insiders nicknamed the primary portal, ASU Interactive, the "link farm."

Worst of all, there were two other sites acting as portals: a generic website that included student resources for specific divisions and departments (such as the registrar), and iGoogle, a customizable front page where students could access their Gmail accounts.

In 2008, when ASU undertook a major portal revamp, a design team surveyed students about how they would accomplish particular tasks online. The survey revealed that students didn't even know where to go. If they were asked how to enroll in a class, for example, answers would vary widely: "Go to the registrar's page," "Go to ASU Interactive," "Search for it," or "Go to PeopleSoft."

"The students couldn't even answer that basic question," notes Leah Lommel, assistant VP of development in the university's technology office. As a result, ASU made the decision to combine the portals to create a more streamlined, simpler experience for students to interact with the university.

The name of the portal was also changed to My ASU. Ironically, the new portal deliberately reduced the amount of customization available to students. Previously, students could elect not to include information about their classes, for instance. "We didn't want that," says Lommel. "We want them to personalize their page a little bit, but we also know what they need to be successful."

As a result, certain components on the page are now fixed, although they can be shrunk. When new information is published to a component, it expands, ensuring that students see the message. When the new design was launched in 2008, a follow-up survey asked students the same questions. "They couldn't answer those questions consistently before," says Lommel. "Now they can."

Key #2: Make the Content Dynamic and Timely

Before **Bucknell University** (PA) redesigned its portal in 2009, the school worked hard to get the campus engaged in developing content for myBucknell, as the portal is called. "We ended up with lots and lots of content," says Lisa Veloz, assistant director of online services. Each type of content was tucked into its own box, or "channel," in the parlance of SunGard Higher Education, whose Luminis portal is used at Bucknell. The result: The portal had about 500 channels. "We had a lot of great links, but it was just information overload," recalls Veloz. "There was no real structure."

The design team made a decision: If a department or division wanted to add information to the main page, it would have to be handled via a dynamic "gadget." A list of simple links would no longer cut the mustard. The new gadgets take the form of event feeds, message centers, and reminders, among others.

Indeed, all the static links have been peeled out of the heart of the page and put into a menu on the left side for persistent navigation. For example, the housing department has its own site, accessible via the link in the left menu. But if housing needs to remind students to download their housing contracts, the message goes into the reminder gadget, which then links students to the housing site to obtain the document itself.

"What we've done in the Luminis platform is build a content-rich intranet that's also authenticated, just like the portal is," says Veloz. "We no longer need to have everything fit into a little channel. And we use these gadgets for things that provide functions—like the menus or news. It's constantly changing."

Key #3: Design for Accessibility

According to Terrill Thompson, a technology accessibility specialist at the **University of Washington**, the portals he evaluates tend to make the same accessibility blunders over and over. Like many portals, the portal at UW uses boxes to organize content on the page. If these boxes have headings that aren't explicitly coded in HTML, then screen readers can't translate them properly for people with limited sight. "Having HTML headings at the top of these boxes is an important consideration," says Thompson. "If somebody can't see, they can still move from box to box and understand that this

ONLINE EXCLUSIVE: Terrill Thompson, a technology accessibility specialist at the **University of Washington**, talks to *CT* about the value of taking your institution's online accessibility compliance beyond Section 508—to the benefit of all campus users.

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is a box that contains related content."

Along the same lines, he adds, a screen reader can't translate graphics. If information is being presented using images, then it also needs to have alternate text so users with screen readers have access to the same information that sighted users do.

Keyboard navigation is another area of attention. "There are lots of websites now that you can't access without a mouse," notes Thompson. "And there are quite a few users who are physically unable to use a mouse." Some portals, for example, use drag-and-drop widgets or gadgets to help users set up their personalized pages. If those same features aren't available in another way, the portal will be of limited value to some users.

The same principle applies to innovative technologies such as Ajax or JavaScript that permit drop-down menus and mouse-over pop-ups: While such whiz-bang tech can make your portal look really cool, you need to provide some other way for users to access the content.

Key #4: Give Users Personalized Looks

There's no reason why your portal should look the same to every user. According to ASU's Lommel, My ASU is highly personalized, with separate versions of the portal specifically for faculty, staff, and students, both graduate and undergraduate.

Students at ASU have a "My Programs & eAdvisor" box on the portal page, which displays information specific to their college, school, or institute, and allows them to connect with an adviser, see transcripts, learn which courses they must still complete, apply for graduation, and view different majors.

But it's not just current students your institution should be thinking about—it's also prospective students and applicants. "We break students out by where they are in the process," explains Lommel. "We started with the current students, and we've been working backwards from there. No matter where you are in the ASU cycle, you'll have some sort of personalized experience."

To gain access to prospects, ASU has set up partnerships with community colleges within the state. "Students can indicate at the community college level that they want to follow a certain path to transfer into ASU," says Lommel. "In some of the colleges, we've done things like shared identities, where the student can get to the ASU experience through authentication by their college."

Key #5: Portals Are Not Just Another IT Project

In 2004, when Bucknell undertook a previous portal redesign, the university assigned developers to the project in between their work on other IT jobs. Once those developers became focused on other initiatives, however, the portal lost its momentum and simply became a repository for anything departments wanted to store behind a registration wall. IT's job devolved into keeping the servers running.

In 2008 the university took a different tack. It created an online services group, led by Veloz, who had been doing IT training and project management. Over time, she became the portal evangelist, "a cheerleader for myBucknell and for working with the departments," says CIO Param Bedi.

The new services group has helped departments recognize that the portal can streamline their work processes and provide the self-service components most needed by students, staff, and faculty. One department met with Veloz to figure out the best way to post 10 different forms onto its portal site. "They said, 'We want to bring these all online. And we want students to stop coming in to hand them in,'" recalls Veloz. Within an hour of that meeting, she had helped to consolidate the forms and whittle the number down to three.

Key #6: Change Is Good, but Plan the Transition

Most people dislike change. Given a chance, they will follow the same path they've always taken—including sticking with an old portal. At some point, you have to pull the plug, but make sure you have a comprehensive plan to ease the transition. At ASU, the portal design team followed a communication plan that included plenty of advertising and promotion about the launch of the new portal.

The clincher, though, was probably the countdown clicker on the old portal page, which showed the number of days until the new portal went live. Once the new site launched, a new countdown started on the old portal, this time telling people how long until the site went dark.

"When that countdown finished, users got automatically redirected to My ASU," explains Lommel. The old and new portal experiences ran in parallel for a month to six weeks. By then, My ASU had proved to be a success, so adoption "kind of snowballed."

Key #7: Base Decisions on Research, but Be Flexible

Even when your portal team members believe absolutely—without question—that they know what's going to drive traffic, make them come up with a plan B.

ASU's team would probably have bet money that the iGoogle area of My ASU would have made the list of biggest hits. After all, it was one of the most popular areas on the old portal, based on the amount of traffic it received and the number of widgets users maintained on it. "We thought people were going to scream

NO ROLE FOR FACEBOOK

DEVELOPING—AND MAINTAINING—a successful portal requires difficult choices and continual refinement of the message, the features, and the functionality. When **Bucknell University** (PA) was designing the latest version of its portal, it considered adding social networking components. After all, what school wouldn't want to deliver its services in a format that digital natives like? Fortunately, what could have turned out to be a pitfall didn't end up that way. "We heard from our students: They didn't want us to make a new Facebook," says Lisa Veloz, assistant director of online services. "When students are in Facebook, they're doing their Facebook stuff. When they're in myBucknell, they're doing their Bucknell stuff. They're separate entities."

for that iGoogle experience—that personalized way to bring in the fun stuff," says Lommel.

As it turns out, traffic to that particular page died down drastically over the course of the year. "What we think happened is that people were really going to the iGoogle site to check their e-mail," explains Lommel. "When we were able to bring their e-mail into My ASU, they weren't using the functionality on the other site. We didn't understand that until we saw the traffic go down."

Even so, the biggest traffic drivers on a portal can still be something of a surprise. "The cafeteria menu is our most popular feature," confesses Veloz. "We've actually had faculty comment that it's the reason they use myBucknell every day."

Key #8: Implement Single Sign-on

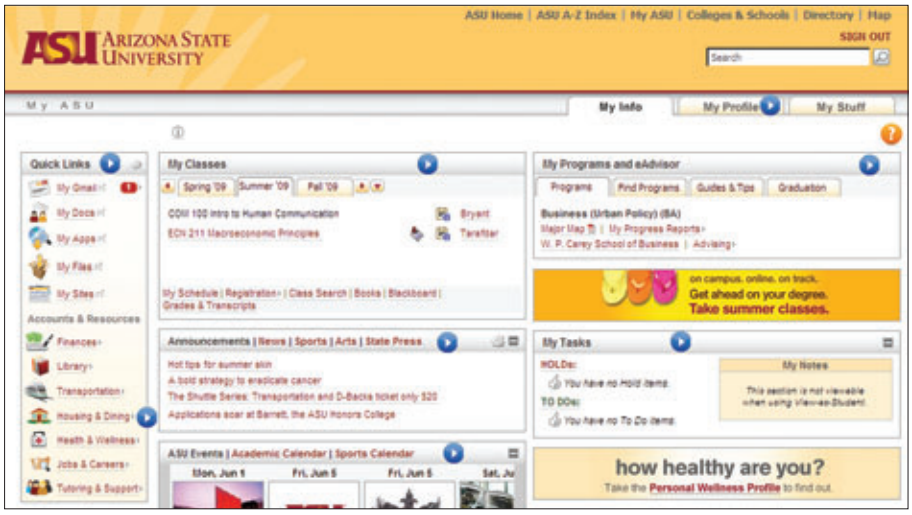
A portal can bring together a fantastic array of customized tools, information, and services. Unless you implement single sign-on, though, students and faculty are still going to look at your portal as having too many barriers.

When **Carl Sandburg College** (IL) released mySandburg in 2005, the school found that people simply didn't have an incentive to use the portal. "They had bookmarks," states Samuel Sudhakar, CIO and VP of administrative services. "Why go to the portal when you can go to your bookmarks and get access to your resources?" The end result was the same, since users still had to log in separately to access different services. Portal adoption stood at about 55 percent.

When the college relaunched its portal in January 2009, though, the adoption rate shot up to 100 percent. The difference? Single sign-on enabled the college to tie in essential services, such as e-mail and calendar, as part of a seamless experience.

"The portal becomes your single point of communication," says Sudhakar, who elected to use Datatel's ActiveCampus Portal technology. "Users start discovering all these little values the portal brings to them, and they start using it in ways we never imagined."

Sudhakar says that his college now has the "Cadillac version of the portal." Users can sign in from any application that requires authentication and that login will be carried along as they move in and out of other applications, including the portal.



ASU'S PORTAL deliberately reduces the amount of customization available to students—resulting in a more streamlined, simpler interface.

Key #9: Make Mobile an Extension of the Portal

Bucknell's embrace of "gadgets" to deliver dynamic content on its portal has also allowed the university to move some of the same functionality onto its mobile platform, even though it's built on a different technology. While the portal uses Luminis from SunGard HE, the mobile strategy relies on the open source MIT Mobile Web framework.

Mark Yerger, director of enterprise systems, explains, "As we create these modules for the portal—what food is being offered, what events are going on, or what hours the library is open this week—we can leverage them in our mobile strategy without a lot of redesign."

In fact, because the portal was developed before work really began on the mobile side, Bucknell knew which gadgets were most popular and could launch its mobile site with those.

"We had a Luminis platform. Then we had myBucknell, which we put on top of it in 2008. On top of that, we now have the mobile strategy," declares CIO Bedi. "All these things are really feeding off each other, which is great, because we're not starting over from scratch."

Key #10: Protect Student Privacy

Understandably, parents want access to their kids' information. And when the portal is where all the juicy info is kept, that's where they head first. Giving parents such access, though, is a violation of the Family Educational Rights and Privacy Act (FERPA).

At Carl Sandburg, this was a problem. The initial password for a new portal account was the last six digits of a student's social security number. All too often, parents figured that out, "which violates FERPA," says Sudhakar. "We had to come up with a strategy where we didn't have to send a piece of mail to every student telling them what their password is."

Now the school uses a password-generation program that has a student walk through a series of steps. First, it authenticates the person against the student database based on certain questions only the student would know. Then the student selects three security questions and sets his own password. Every 90 days it has to be reset. **CT**

***Dian Schaffhauser** is a senior contributing editor of this magazine.*

RESOURCES

For links to the portals and vendors mentioned in this article, visit *campustechnology.com/0811_portal.*

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Palm Beach State College is one of the largest colleges in Florida with more than 52,000 students. In 2010, the college decided to switch from its traditional partial refresh cycle to a campus-wide refresh of all machines. To improve productivity and their environmental initiatives at a cost-effective price, Palm Beach State abandoned its long-standing relationship with another vendor in favor of a new relationship with HP.

IT at Palm Beach State is charged with providing support to teaching and learning efforts, meeting the environmental initiatives of the college, and helping to ensure an affordable total cost of ownership (TCO). This can be challenging, especially if equipment is older and unreliable.

Palm Beach State CIO Anthony Parziale says, "We used to refresh about 25 percent of our machines every year, but this approach always had problems. It didn't allow us to fix technical issues, such as the different images on machines across our four locations. We couldn't upgrade to one consistent operating system. And we always got complaints—no one was happy when the person in the next office got a new computer and they didn't. So when HP approached us with a new plan and a great interest rate, we were very interested."

Bruce Michelson, national lifecycle manager for Hewlett Packard Personal Systems Group and well-known expert on tech refresh issues, believes that the current economy is changing the thinking about the pros and cons of partial versus complete refresh options. "There are no right or wrong answers—only conscious and unconscious decisions," says Michelson. "However, the traditional reasons for the partial refresh option are less valid in today's economy." (See Michelson's presentation at *http://h30395.www3.hp.com/search?page=1&type=-1&q=Closed+Life+cycle+planning*.)

Michelson says that there are many common justifications offered for the partial refresh: First, people think it makes sense to extend the life of existing machines; second, is the thought that power consumption is the only cost-savings offered by new machines, and those savings don't accrue to the IT budget anyway; third, is the belief that "we can't do a complete refresh because we just bought new hardware."

However, Michelson believes that the problems faced by colleges and universities today are different because many institutions have already extended the useful life of their machines due to budget cuts—making today's PC fleets even older than in the past. "In the past 24 months, while we were extending the useful life of the fleet, the technology footprint has dramatically changed," he says. New software releases, energy management options, and power management options do not run well on the older devices. In addition, Windows 7, new chipsets, new form factors, and virtualization are changing the way institutions need to evaluate their refresh options.

> "Now we have to look at refresh cycles from a strategic perspective because the economics are different."
>
> *—Bruce Michelson, HP National Lifecycle Manager*

HP Compaq 6005 Pro Microtower PC with VISION Pro Technology from AMD

"At Palm Beach State, we wanted to get everyone the same level of technology," says Parziale. The college installed more than 4,000 new HP PCs based on VISION Pro Technology from AMD during the summer of 2010. About 60 percent were HP Compaq 6005 Pro Microtower PC desktops and 40 percent were HP Compaq 6535b Notebooks. This has allowed the college to reduce the number of images from over 100 down to one, and, with help from HP, ensure that every machine on campus is running Windows 7.

Palm Beach State took advantage of the opportunity to accomplish several other objectives at the same time. Since AMD-powered PC's feature DASH 1.1, enabling open-standards client manageability at no additional charge, Palm Beach was able to choose the management suite most appropriate for their environment. IT implemented Microsoft's System Center Client Management Suite, an integrated set of programs for managing large numbers of Windows-based computers, consolidated all the

TECH REFRESH CHECKLIST

A successful tech refresh involves much more than replacing machines. Before purchasing and installing new machines, institutions can use the following checklist to ensure a smooth implementation.

- Select team—IT/finance/other stakeholders.
- Identify vendors for bids.
- Determine questions (environmental capabilities/TCO/warranty/pricing, etc.).
- Identify uniform evaluation criteria.
- Consider the average user's needs, and prepare to measure potential system performance against a multi-tasking script reflective of the average user's activities.
- Ensure adequate power requirements/outlets/drops/ Ethernet connections.
- Ensure adequate network closet space/equipment.
- Ensure sufficient wireless capacity.
- Purchase cords.
- Review/update printer layout.
- Review/plan monitors/flat screen displays.
- Identify staging area.
- Ensure operating system is understood.
- Ensure warranties are understood.

software in use across campus, and implemented VDI, a virtual desktop infrastructure that will allow IT to keep all the software on campus up-to-date by delivering it from a central location. "We wanted to load everything over the network—only Windows 7 is on the machines themselves," says Parziale. "And we've cleaned up the software situation by getting rid of multiple versions. We expect that this more streamlined approach will improve TCO over the long term."

According to Michelson, the research shows that the TCO, total cost of ownership, is made up of many components. "Acquisition price was often the only point of discussion in the past, but TCO research shows that this can be less than 20 percent of the overall cost," he says. Other TCO factors include residual value, power management, the ability to handle new operating systems and applications, and the costs associated with "cascading" devices down to lower power users. "Refreshes are no longer a tactical IT project. Now we have to look at refresh cycles from a strategic perspective because the economics are different," says Michelson.

> "From a service standpoint, having only two models to support makes life much easier."
>
> *—Anthony Parziale, CIO, Palm Beach State College*

At Palm Beach State, the implementation started with what Parziale calls "the low-hanging fruit." IT replaced the faculty and classroom computers first, along with some of the administrative machines. "Everything is now complete except for some specialized situations, such as workforce training programs where the software struggles to be Windows 7 compatible," says Parziale. "And from a service standpoint, having only two models to support makes life much easier. Now we don't have a room full of computers we're working on. And we have found that the AMD processor is very good and ideal for our situation."

Parziale is pleased with the energy efficiencies the college has achieved. "We're very satisfied that this refresh is meeting our sustainability goals," he says. "For example, we now manage the machines' automatic sleep mode from the system center. Many people on campus were neglecting to do this before." It's widely understood that the amount of energy consumed by today's desktops and notebook PCs is much less than that consumed by the machines of three years ago. Michelson points out that institutions must take into consideration other environmental factors, such as partner commitment to environmental initiatives, which varies widely; the impact of fewer service calls, which reduces transportation needs; disposal issues, since newer devices are lighter and offer options for disposal and recyclability; and upgrade incentives from utility companies, federal and local legislation, and device manufacturers.

Environmental initiatives and cost-savings often coincide. As machines age, power consumption becomes less efficient, creating an increase in cost. "A PC strategy that 'rides til it dies' contradicts sustainability trends and challenges affordability," says Michelson.

At Palm Beach State, IT is meeting many goals. "We have a very cost-effective lease-purchase deal through the HP Tech Refresh program that also addresses our environmental initiatives," says Parziale. "And in three years, we get to refresh again or opt in and purchase."

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CAMPUS TECHNOLOGY innovators AWARDS 2011

TECHNOLOGY

PEPPERDINE'S leadership team puts IT at the heart of strategic decision-making.

Photograph by Jay P. Morgan

By Meg Lloyd and David Raths

ALL-STARS

CONGRATULATIONS TO OUR 2011 CAMPUS TECHNOLOGY INNOVATORS!
Out of a total of 393 entries, 10 winners rose to the top in six categories: Leadership, Governance, and Policy; Teaching and Learning; Student Systems and Services; Administrative Systems; IT Infrastructure and Systems; and Education Futurists. These innovative IT leaders have tackled unique tech challenges and forged their own paths to support technology change on campus. Worthy of recognition, too, are the vendors and products that help make these projects a reality.

Each year we receive an impressive variety of award nominations—and 2011 was no different, encompassing everything from e-portfolios to video surveillance. Common themes also emerge: The top 10 keywords from this year's entries were learning, technology, management, student, mobile, collaboration, online, data, virtual, and computing.

Three of our winning schools are making a repeat appearance: For **Purdue University** (IN), **Penn State University**, and the **Duke University School of Nursing** (NC), technology innovation is clearly a priority on campus—to the benefit of faculty, staff, and students alike. Find out more about their previous award-winning projects at *campustechnology.com/innovators*.

Finally, our thanks to the Innovators Judging Committee (see "Meet the Judges," page 42), as well as the hundreds of deserving entrants who participated this year.

LEADERSHIP, GOVERNANCE, AND POLICY

Pepperdine University

Project: Integrated Information Resources Advocacy, Management, and Institutional Effectiveness
Project lead: Timothy Chester, vice provost for academic administration and CIO

Technologies used:
Oracle
Xythos (Blackboard)

At a time when many IT leaders fear that their departments may become marginalized, **Pepperdine University** (CA) has made a concerted effort to put IT and information-resource management at the heart of strategic decision-making. In January 2010, a bold reorganization merged the university-wide functions of planning, IT management, and institutional effectiveness and research under the CIO. The CIO's role was also broadened to include vice provost for academic administration, and was realigned under the Office of the Provost. The goal was to create a one-stop shop for information-resource management and advocacy that would improve institutional effectiveness.

Timothy Chester, who now fills the newly created position, led the reorganization effort. The tighter alignment of IT with high-level institutional strategy, Chester believes, has resulted in improvements in the university's planning processes, especially by directing attention toward outcomes and providing data to help shape decision-making. The realignment has also helped sharpen the focus of technology projects, such as the university's iPad initiative, ensuring that implementations are linked directly to institutional goals.

"First, we are focusing on outcomes as opposed to inputs or process," he says. "While the latter are important, they are only important in service to the outcomes that are attained by our faculty and students. Second, hand in hand with the focus on outcomes, is a relentless pursuit of data. As we think about challenges or opportunities—the graduation rates of our students, the debt loads they take on

as they complete their degrees, our ability to retain them, or how we develop and position new programs—the first question now is, 'What does the data tell us?'"

Chester serves as the "chief advocate" and operational leader for the integration of information resources throughout the university. He convenes discussions of strategic academic issues by chairing the University Academic Council and developing the agenda for the University Planning Committee. IT is now more integrated into Pepperdine's information-resource ecosystem, with leading-edge IT functionality the norm in strategically important areas such as academic analytics, outcomes assessment, institutional research and effectiveness, key performance indicators, information-research management, and university planning.

The overall strategic effort has been supported by significant investment in administrative systems. While existing enterprise systems play a role, the recent implementation of Oracle PeopleSoft Finance, Human Capital Management, and Campus Solutions has contributed enormously to the success of the reorganization. Data warehousing is accomplished with Oracle EPM, and Blackboard Xythos is used for the storage of unstructured content.

As campus decision-makers review program effectiveness and allocate precious resources in an uncertain economy, they are now supported by an enterprise infrastructure that supports the collection, analysis, and dissemination of critical data. Just as importantly, university planning functions now benefit from an organizational structure that is well tuned to the institution's integrated-information resources.

THE PURDUE SIGNALS TEAM (clockwise from top left): Guneshi Wickramaarachchi, John Campbell, Kimberly Arnold, Ben Holmes, Geoff Holden, James Stanchfield, Sasi Benzigar.

TEACHING & LEARNING

Purdue University

Project: Signals
Project lead: John Campbell, associate VP for academic technologies

When it comes to retention efforts, real-time data are vital in helping institutions identify struggling students early and intervene before it's too late. **Purdue University**'s (IN) Signals academic-intervention program is built on that premise, developing actionable intelligence based on real-time data mining and a broad range of predictive factors.

Technologies used:
Blackboard
QSR International
SPSS (IBM)
SunGard Higher Education

Signals uses enterprise systems already in place at the university—Blackboard Vista, SunGard Higher Education Banner, and other course- and student-information management tools—to mine relevant data. A sophisticated predictive algorithm developed at Purdue using SPSS (now IBM) then analyzes the data. Signals not only identifies at-risk students by analyzing quiz or test scores; it also factors in remedial or "improvement" actions taken by a student, such as help center usage or office hour visits with instructors. The result is a more complete view of a student's status and path toward potential success or failure. It's a real-time, early intervention system that provides students with timely, concrete steps to improve their coursework, targeting specific areas where their academic success may be at risk.

From a student's point of view, Signals is straightforward. Whenever students log in to a course's home page on the CMS, they see their status for that course in color-coded terms based on a traffic light: Green represents a high likelihood of success; yellow means potential problems; while red puts them at risk of failure. Feedback to students is frequent and authoritative: As early as the second week of a semester, students may begin to receive alerts via e-mail, text messaging, phone calls, or other personal contact from instructors.

The role of the instructor in Signals is critical. Faculty members are in the best position to intervene effectively, so they are carefully trained in—and must be committed to—the use of the Signals program. "The most satisfying part of the Signals project is having faculty, student services, and information technology work together to develop new approaches for identifying students at risk," observes John Campbell, associate vice president for academic technologies. "Signals demonstrates how information technology can be a partner in solving key institutional challenges such as student success."

Signals interventions have substantially boosted student success and resulted in better student satisfaction and retention rates. In spring 2010, students in courses using Signals scored up to 26.45 percent more A or B grades (depending on the class), up to 12.65 percent fewer C's, and up to 17.27 percent

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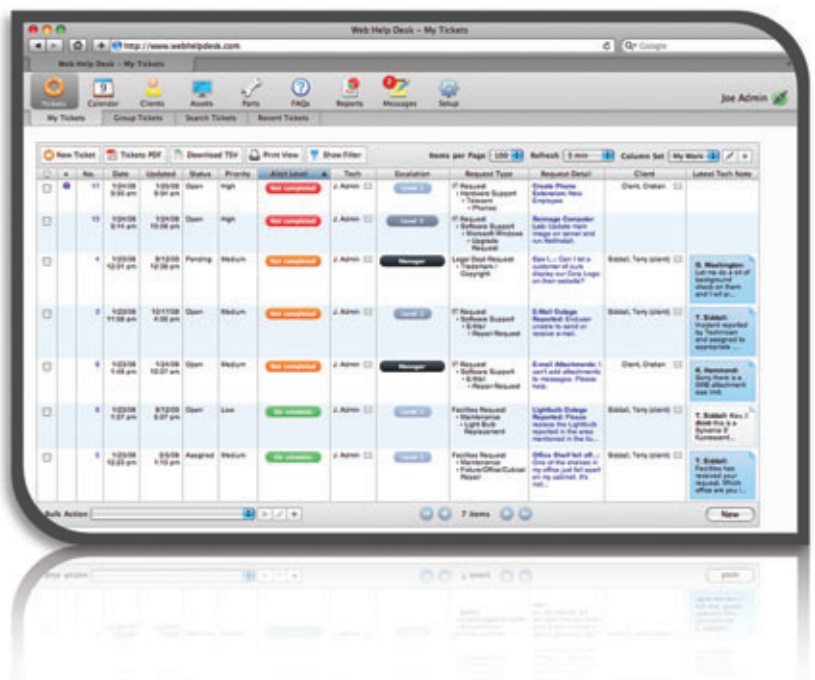

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fewer D's and F's than students not using the system. Over the course of the semester, 55 percent of high-risk students pulled into the moderate-risk group (earning a C grade), while 24.4 percent actually pulled into the green group (achieving an A or B). Purdue is tracking the results of Signals over time and uses QSR International's NVivo to help evaluate the impact of the project.

Signals has grown to maturity from its beginnings as a research project in 2005 to an established program impacting 8,223 students at Purdue in 2010. And Purdue now partners with SunGard Higher Education to install the system at other higher ed institutions: Schools that have implemented or have plans to roll out Signals include **Metropolitan Community College of Kansas City** (MO), **Northeast State Community College** (TN), **Northeast Wisconsin Technical College**, and **Muskegon Community College** (MI).

New York University Stern School of Business

Project: iPad App to Improve Access to and Use of Digital Course Materials
Project leads: Anand Padmanabhan, CIO; Maya Georgieva, assistant director of educational technology

Anand Padmanabhan is not just the chief information officer of **New York University**'s Stern School of Business; he is also a student in its executive MBA program. So in early 2010, when XanEdu Publishing, the developer of course packs for Stern courses, gave a presentation at Stern's Center for Innovation in Teaching and Learning about its road map to develop an iPad version of its material, Padmanabhan was eager to hear it.

"I brought six incredibly heavy course packs to the meeting," he recalls. "They are the size of Ayn Rand novels." He wanted to know if XanEdu digital course packs could enhance the learning experience and reduce the amount of paper students carry around. Other NYU students were even more enthusiastic than Padmanabhan, and they pressed him to get involved in the app development. "It became a grassroots thing," he says. "I saw we had an opportunity to provide input, so what was rolled out eventually would provide greater value to students."

Technologies used:
XanEdu Publishing

In the fall 2010 semester, Padmanabhan and project co-lead Maya Georgieva, assistant director of educational technology, began an extensive pilot of the XanEdu iPad app in more than 50 of Stern's MBA courses, and provided feedback to XanEdu through surveys, one-on-one interviews, and focus groups. According to Tyler Steben, XanEdu's vice president of custom publishing, student involvement was a critical part of the app development. Students were asked to rate and compare the features, functionality, and usability of the app. But what was most informative, Steben says, was being able to watch closely how students used the material on the iPad.

"They have pretty specialized needs, and the product needs to support their workflows," he notes. For instance, students don't read course materials in a linear fashion as they do a novel; they jump around from page to page. "Watching them helped us develop some special tools that aren't in a Kindle or other e-book reader," Steben says. One of these tools is called the "magic back button," which acts like the back button on a web browser to take students to a previous page elsewhere in the text.

Because MBA students frequently collaborate in teams, Steben says, XanEdu also had to develop better tools to facilitate teamwork: "Students make notes and annotations, which other team members can easily import into their copy of the material, turn on or off, and make a special color."

Part of XanEdu's challenge was deciding which student recommendations to incorporate and which to ignore. "If it is key to the experience and if we are hearing it over and over, we know we have to address it," Steben says. "The most important thing is to spend time watching students use the app and interview them one-on-one. After that, it is easy to make those decisions."

The XanEdu iPad App was approved by Apple and released in December. A survey of students after the pilot semester found that 98 percent wanted Stern to continue the program and expand the number of courses using the iPad.

NYU Stern has been a beta tester for educational products in the past, not always with positive results. "Some vendors think they know everything at the outset," Padmanabhan says. "It all depends on how good the vendor is at listening. XanEdu was willing to work with us as a partner. I sensed that they were flexible and open to recommendations. They said, 'Here's what we have. How can we make it better?' I would say they tried to incorporate 60 percent to 70 percent of the suggestions."

XanEdu and NYU Stern officials say they plan to collaborate on future technologies to enhance the teaching and learning experience.

And on most weekdays you can find Padmanabhan riding the subway home from work reading case studies on his iPad. "In the executive MBA program, we work in teams on cases," he says, "so the ability to share notes makes us so much more effective."

Santa Barbara City College

Project: The Human Presence Learning Environment
Project lead: Douglas Hersh, dean of educational programs

When Douglas Hersh was named dean of educational programs at **Santa Barbara City College** (CA) in 2007, he had just finished writing his doctoral dissertation on what's missing from distance education and how to fix it. But he never thought he'd have the opportunity to put his ideas into practice so soon.

Convinced that the lack of personal interaction online is behind low student satisfaction and class-completion rates, Hersh persuaded colleagues to join him on a journey to remake the school's learning management system. Rolled out in 2009, the school's Human Presence Learning Environment is a sophisticated customization of the open source Moodle LMS. It

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introduces a social component by including streaming media, voice boards, presence indicators, microblogs, and interactive class assessments.

Hersh believes too many distance-learning efforts have downplayed the importance of the social aspect of learning. "What turns students off most is a bad interface," he says. Among the adjectives he applies to the typical LMS are *cold*, *impersonal, alienating, static,* and *text-driven*. "If students get frustrated and apathetic in the first few meetings of a course, they are toast, because the cohort has passed them by and they drop out." In planning the Human Presence Learning Environment, he hypothesized that greater levels of engagement with instructors and other students would lead to a higher level of success.

Technologies used:
EduStream
Elluminate (Blackboard)
Moodle
Remote-Learner
Skype
Twitter
Wimba (Blackboard)
YouTube

It took Hersh a year to convince colleagues to transition away from Blackboard and to develop a governance structure for the new open source system. He even made a film for campus stakeholders about his vision of the future of education and the role of technology. He credits SBCC Superintendent/President Andreea Serban, Executive Vice President Jack Friedlander, and David Wong, director of the Faculty Resource Center, with providing the executive leadership to make the transition happen campuswide.

"We have created an expectation that all instructors are regularly in touch with each student," Hersh says.

On the technology front, Hersh and Jason Walker, SBCC's director of educational applications, worked with Remote-Learner, a consulting firm that specializes in Moodle customization, to incorporate as many free and low-cost web-based communication applications as possible, including Skype, Elluminate, Wimba, Twitter, YouTube, and EduStream. Instructors use Skype for office-hour chats with students, a new requirement for online courses. They use collaboration tool Elluminate (now part of Blackboard) for synchronous presentations, which are recorded for those unable to attend. The system also features a voice board, similar to a discussion thread that uses voice messages instead of typing. And the Twitter feed can be used by faculty to remind students of an upcoming quiz, for example. In addition, a presence indicator allows students to see who else is online so they can engage in a chat.

Webcams and Flip cams are used to record video presentations. "The streaming video is important," Hersh says. "The students can see the whites of their instructors' eyes, their laughs, their nonverbal communication." Once enrolled in a course, students watch a brief video developed by the instructor that outlines the week's goals; read the notes for that week; engage in the voice board; and take online quizzes.

SBCC has created an expectation that all instructors are regularly in touch with each student.

SBCC's Faculty Resource Center works with instructors to pepper their courses with videos, interactive quizzes, and other learning activities. It also built a course-regeneration tool that allows faculty members to "roll over" their prior semester courses and make modifications.

Hersh closely tracks student satisfaction, completion, and success rates: His research has found that students prefer the new environment, and tend to remain enrolled in courses longer and perform better. In 2009, student engagement and satisfaction with the Human Presence Learning Environment were 9.3 percent higher than with any other LMS in use at SBCC, and class-completion rates were 5.1 percent higher. Academic success, a measure of students completing their courses with a grade of C or better, was 9.4 percent higher.

Although the open source system is less expensive than a commercial product, Hersh stresses that "this is not about saving money. We are reinvesting the money we spent on Blackboard on instructor stipends for training and other tools. It is about giving faculty the freedom to teach the way they teach as mentors and establish that human connection with students."

SBCC'S HUMAN PRESENCE Learning Environment combines an LMS with as many free and low-cost web-based communication applications as possible.

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OPENING KEYNOTE

Fostering Creativity & Collaboration in the Academy

Johanna Blakley, Deputy Director, Norman Lear Center, USC Annenberg School for Communications & Journalism

WEDNESDAY KEYNOTE

This Time is Different: How IT Organizations Can and Must Change to Survive and Thrive in the New Normal

Timothy Chester, Vice Provost and Chief Information Officer, Pepperdine University

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- Birds of a Feather discussion tables at lunch
  Tuesday through Thursday
- Beverage breaks: Enjoy casual networking and coffee connections
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- Exhibit Hall Reception
- Poster Sessions and various meet-ups throughout the conference!

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Exhibit Hall
Meet face-to-face with representatives of leading education tech companies, or preview and purchase the latest money-saving hardware, software and peripherals.

keynotes

OPENING KEYNOTE

Wednesday, September 28, 2011 8:30 am – 9:45 am

Fostering Creativity & Collaboration in the Academy

Johanna Blakley, Deputy Director, Norman Lear Center, USC Annenberg School for Communications & Journalism, University of Southern California

Johanna Blakley explores the rapidly evolving new media landscape and considers the complex and often unexpected changes in the knowledge economy around us. Many of the advances in social media, digital technology, electronic publishing, research collaboration and information management have their roots in academia, but are all of us who work, teach and learn at higher education institutions prepared for dramatic shifts in the ways we interact, do business and go about our professional and academic pursuits? What key issues do we need to face in order to take full advantage of the revolutionary new technologies that promise new frontiers for collaborative research with timely real-world impact?

THURSDAY KEYNOTE

Thursday, September 29, 2011 8:30 am – 9:45 am

This Time is Different: How IT Organizations Can and Must Change to Survive and Thrive in the New Normal

Timothy Chester, Vice Provost and Chief Information Officer, Pepperdine University

The challenges facing IT leaders in higher education today are fundamentally different than those of the past. Today's opportunity—the challenge of technology advocacy and evangelism—requires significant adaption and change in the way we define our work, set expectations and engage campus constituencies. In this keynote presentation, the related topics of organizational roles, organizational credibility and the need for an outcomes-based approach to assessment and planning will be examined as we consider how IT organizations, along with technology champions across campus, can play a greater role in helping their institutions realize the transformative power of technology.

CLOSING FORUM

Thursday, September 29, 2011 4:05 pm – 5:00 pm

Guideposts for IT: Survival and Excellence in Difficult and Changing Times - Panel Commentary and Plenary Discussion

Panelists: Ruki Jayaraman, Dean, College of Undergraduate Studies, Argosy University, Ron Danielson, Vice Provost and Chief Information Officer, Santa Clara University, Rich Pickett, Chief Information Officer, San Diego State University

Join in a fast-paced exchange of key takeaways from the past three days of conference sessions and hallway discussions. Through a series of timed questions, the panel works to crystallize the best learning and discoveries from the event. Take the microphone and speak your mind—the audience acts as the "fourth panel member" in this highly interactive closing forum.

CONFERENCE AT A GLANCE

Leadership Challenges and Opportunities | IT in Changing Economic Times | Industry Directions
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TUESDAY SEPTEMBER 27, 2011

9:00 AM – 12:00 PM

T01
eText: Features, Applications, and Program Implementation
Rand Spiwak, Daytona State College (Ret.)

T02
Education 3.0: Data, Creativity, and Personalization
Jeff Borden, Chaminade University

12:00 PM – 1:00 PM LUNCH

1:00 PM – 4:00 PM

T05
Building a Social Learning Framework
Linda Wallace with Susan Gautsch, Pepperdine University

T06
Moving Your Practices to the Cloud: Using New Approaches to Reach Today's Students
John Kuglin, University of Montana (Ret.)

4:15 PM – 5:15 PM GENERAL SESSION David Cottingham, Senior Director, Managed Services, CDW

5:15 PM – 7:00 PM POOLSIDE RECEPTION AND ATTENDEE NETWORKING sponsored by CDW-G

WEDNESDAY SEPTEMBER 28, 2011

8:30 AM – 9:45 AM OPENING KEYNOTE
Fostering Creativity & Collaboration in the Academy
Johanna Blakley, Deputy Director, Norman Lear Center, USC Annenberg School for Communications & Journalism, University of Southern California

10:00 AM – 10:55 AM

W01
Good-bye Paper! How to Get 30,000 Students to Apply Online
Mark Mikelat, Long Beach Community College

W02
Creating a Dynamic Virtual Community for Online Instructors
Michelle Kosalka, Herzing University Online

W03
Evidence-Based Use of Mobile Technology in F2F, Blended, and Online Learning
Scott Hamm with Tina Powers, Abilene Christian University

W04
The 21st-Century Campus
Presented by CDW-G

11:05 AM – 12:00 PM

W05
The Case for the InCommon Federation
Bill Balint, Indiana University of Pennsylvania

W06
Beyond the eTextbook: Writing Mobile Webapps for the Liberal Arts
Lisa Lewis with Ian MacInnes, and Aaron Miller, Albion College

W07
Exploring and Building Effective Vendor Partnerships for IT
Jorge Mata, Los Angeles Community College District

W08
Good Form: Going Digital in a "Print and File" Campus Culture
Michael Skarp, University of Wisconsin-Eau Claire with E. Scott Menter, BP Logix

12:00 PM – 3:00 PM LUNCH AND EXHIBIT HALL

2:00 PM – 3:00 PM POSTER SESSIONS

3:00 PM – 3:55 PM

W09
The Book Stops Here: Electronic Materials Changing Textbook Adoptions
Christie Smith, Lone Star College System

W10
Impact of Student Support Services on Retention of Online MBA Students
Tricia McConville with Dee Masiello and Aubrae A. Matthews, Northeastern University

W11
TBA

W12
Virtualization – It's not just for servers anymore!
Allen Clingerman, GovConnection, Inc.

4:05 PM – 5:00 PM

W13
TBA

W14
Electronic Dashboarding and Strategic Planning: A Marriage Made in Heaven
Iva Bergeron with Bobbi Dunn, Lincoln Land Community College

W15
TBA

W16
Challenges of Designing the 21st Century Classroom Multimedia System
Tim Schnabel, Director of Education Programs, Extron Electronics

5:00 PM – 6:30 PM EXHIBIT HALL RECEPTION

THURSDAY SEPTEMBER 29, 2011

8:30 AM – 9:45 AM GENERAL SESSION KEYNOTE
This Time is Different: How IT Organizations Can and Must Change to Survive and Thrive in the New Normal
Timothy M. Chester, Vice Provost and Chief Information Officer, Pepperdine University

10:00 AM – 10:55 AM

TH17
IT Leadership: Building a Better IT Project and Support Model
Bill Balint, Indiana University of Pennsylvania

TH18
Campus GIS
Mono Simeone, City College of San Francisco with Shreepad Randive, i-Ten Associates

TH19
The Growing Role of Mobile Learning in Graduate Management Education
Owen Hall, Pepperdine University

TH20
Strengthening Student Engagement Through Advanced Social Networking Technologies
Melissa Loble, GoingOn Network

11:05 AM – 12:00 PM

TH21
How to Jump the Curve and Raise the Bar for Your IT Group
Thomas Hoover with Gerard Flynn, Pepperdine University

TH22
Creating Sustainable Learning for New Digital Adult Learners
Deborah LeBlanc, National University

TH23
If You've Got It, Use It! Low-Cost Strategies That Improve Service
Christina Cross with Christie Smith, Lone Star College System

TH24
Open Source Mobile Platform Design to Meet Campus Demands
John Lewis, Unicon with uMobile Working Group Representatives

12:00 PM – 3:00 PM LUNCH AND EXHIBIT HALL

2:00 PM – 3:00 PM POSTER SESSIONS

3:00 PM – 3:55 PM

TH25
ePortfolios in Undergraduate and Teacher Education Programs
Mike Ramirez with Steve Pillow and Kimberly Humerickhouse, MidAmerica Nazarene University

TH26
Virtualization: Going the Distance on College Campuses
Leigh Buchwald, Citrus Community College

TH27
TBA

TH28
Data Center Efficiency Evolution for Colleges and Universities
Mark Evanko, BRUNS-PAK

4:05 PM – 5:00 PM CLOSING FORUM
Guideposts for IT: Survival and Excellence in Difficult and Changing Times Panel Commentary and Plenary Discussion
Panelist: Ruki Jayaraman, Argosy University, Rich Pickett, San Diego State University, Ron Danielson, Santa Clara University

workshops

TUESDAY GENERAL SESSION

Getting to the Cloud **Tuesday, September 27, 2011 4:15 - 5:15 pm**

David Cottingham, Senior Director, Managed Services, CDW

A recent study found that just 29 percent of higher education institutions have a written plan for cloud computing. Learn how campuses are creating and leveraging successful cloud strategies.

T01 eText: Features, Applications and Program Implementation Tuesday, September 27, 2011 9:00 am - 12:00 pm

Rand Spiwak, CEO, eTextConsult, LLC, Ret. EVP/CFO Daytona State College

Digital content, current hardware and e-reader software technology, willing publishers/authors and outrageous textbook prices have opened the door for "eText"—interactive, electronic textbooks. In this hands-on workshop, attendees will explore the features and applications of electronic textbooks as well as consider eTextbook program implementation for the campus. The presenter will lead a guided tour of the expanding eTextbook marketplace and explain the economies of eText.

T02 Education 3.0: Data, Creativity and Personalization Tuesday, September 27, 2011 9:00 am - 12:00 pm

Jeff Borden, Enriched Lecturer, Chaminade University

As technology informs educational delivery, assessment, content creation and more, it is transforming teaching and learning. But, as we make the shift from Web 2.0 to Web 3.0, educators must filter through the "shiny objects" to best understand what actually works and what does not in the context of higher education. In this hands-on, interactive workshop, attendees will sample simulations, games, social structures and examples of differentiated learning for today's students. The presenter will provide more than 500 (mostly free) digital resources for the classroom.

T05 Building a Social Learning Framework Tuesday, September 27, 2011 1:00 pm – 4:00 pm

Linda Wallace, Senior eLearning Specialist, with Susan Gautsch, Director of eLearning, Pepperdine University

Businesses, professional associations and university alumni groups eagerly embrace social media and collaboration through Enterprise 2.0 frameworks and tools. Unlike the traditional, instructor-centered LMS, an enterprise social learning framework promotes open and frequent communication, social learning, peer collaboration, knowledge management and collective intelligence. In this workshop, we'll explore how this model can be applied to the 21st century learner. The presenter is using this framework at Pepperdine University and will draw some examples from the experience at Pepperdine.

T06 Moving Your Practices to the Cloud: Using New Approaches to Reach Today's Students Tuesday, September 27, 2011 1:00 pm – 4:00 pm

John Kuglin, Ret., University of Montana

It is important for all educators today—especially those in post-secondary roles—to learn how to maximize their potential for using cloud-based resources in their teaching practices. This is particularly true given the financial restrictions institutions face today. Innovative instructional and collaboration tools now populating the web are essential for educators to tap into regardless of subject area. Educators need to be proactive in setting up both on line and blended learning environments using both university and personally subscribed to resources found in the cloud. Join John Kuglin as he challenges you with a 10-point personal technology plan to help you increase your effectiveness as a 21st century practicing educator.

sessions

INDUSTRY DIRECTIONS

Sessions contributed by the vendor community. Scan the horizon for new technologies and find that future wave that can positively impact IT on your campus.

W04 The 21st-Century Campus

Presented by CDW-G

Students tell us that they have high expectations for campus technology, but administrators have competing priorities. Learn how to create and sustain the 21st-century experience on your campus.

W08 Good Form: Going Digital in a "Print and File" Campus Culture

Michael Skarp, Eform Task Team Technology Manager, University of Wisconsin-Eau Claire

E. Scott Menter, Vice President, Business Solutions, BP Logix

UW-Eau Claire is moving campus forms from print, Web-based, MS Word-based and PDF-based formats to one electronic system using Process Director BPM from BP Logix. Find out why the university chose to move to electronic forms, how it decided on the software and how the Eforms Team was formed. The presenters will discuss processes, procedures, results, next steps and lessons learned—and they will describe the most important things you'll need for a successful implementation in your institution's unique environment.

W12 Virtualization–It's Not Just for Servers Anymore!

Allen Clingerman, Solutions Architect, GovConnection, Inc.

What does desktop virtualization really mean? More importantly, how can your IT organization leverage it to deal with the daily demands of provisioning, administering, securing and supporting all your desktops? Come learn about the current state of desktop virtualization, application virtualization and the evolution of thin client computing.

W16 Challenges of Designing the 21st Century Classroom Multimedia System

Tim Schnabel, Director of Education Programs, Extron Electronics

The 21st Century learner demands more A/V technology than TV and DVD player to be engaged. Instruction spaces should be complete with integrated A/V solutions that benefit teachers, students, and administrators alike. This session will dive into challenges faced with designing classrooms; HD digital video, distributed audio, control and management. The session will provide ideas on maximizing investment in technology in order to enhance the learning environment.

TH20 Strengthening Student Engagement through Advanced Social Networking Technologies

Melissa Loble, VP of Client Strategy, GoingOn Networks

What is academic life like when you shift focus to each individual student? What happens to higher education when you move beyond the course? And what becomes possible when you give students centralized, highly personalized, intelligent access to information enabling them to better achieve their academic goals? Learn how GoingOn makes this possible for UPenn and others with a unique academic life networking platform that expands the social and intellectual dimensions of the student experience.

TH24 Open Source Mobile Platform Designed to Meet Campus Demands

John Lewis, Chief Software Architect, Unicon with uMobile Working Group Representatives

Campuses are already looking for the next generation mobile platform. Early products are limiting flexibility and an IT manager's ability to push our new native and browser-based applications. Jasig has launched a new open source mobile app for higher education, uMobile, which cost effectively delivers campus applications, content and data to mobile devices. This session will share the benefits of adopting uMobile as the campus mobile platform.

T28 Data Center Efficiency Evolution for Colleges and Universities

Mark Evanko, Principal - Engineer, BRUNS-PAK

The data center facility infrastructure is the "orchestra leader" that optimizes the delivery of the solution while maximizing the cost/benefit analysis. Learn how the components contribute to the overall efficient solution. Understand various cost and scheduling factors. Learn "real life" client options and alternatives. View the impact of thermodynamics, chilled water solutions, and the overall electrical utility trend.

INFRASTRUCTURE AND LEARNING ENVIRONMENTS

How to create effective online and virtual environments for today's communities of collaborative learners as well as a support infrastructure for campus services. Identifying strategies that build value and sustainability into enterprise systems and services.

W02 Creating a Dynamic Virtual Community for Online Instructors

Michelle Kosalka, Program Chair, English and Communications, Herzing University Online

A talented pool of online faculty can be difficult to bring together into a virtual community, especially when they never meet each other face-to-face. This

presentation will focus on a faculty-driven initiative at Herzing University to create an Online Faculty Hub in Blackboard 9.1. Attendees will leave the session with a model for similar projects to share with online faculty at their institutions.

W05 The Case for the InCommon Federation

Bill Balint, Chief Information Officer, Indiana University of Pennsylvania (IUP)

With cloud computing, consortium applications, social networking and traditional single sign on, higher education IT organizations require an authentication solution that can provide their users with access to all the resources they need. Indiana University of Pennsylvania (IUP) found first Shibboleth, and then the InCommon Federation to be invaluable as they tackled the authentication challenge.

W10 Impact of Student Support Services on Retention of Online MBA Students

Tricia McConville, Executive Director, Online Education, with Dee Masiello, Director, Online Business Programs, and Aubrae A. Matthews, Online/Distance Learning Specialist, Northeastern University

While research indicates retention rates in online programs are declining, Northeastern's Online MBA bucks this trend. Blending an innovative program structure with 21st century student services, the program's unique structure, student support services and best practices will be discussed.

TH18 Campus GIS

Mono Simeone, Adjunct Faculty, City College of San Francisco with Shreepad Ranadive, Director of Application Development, i-Ten Associates

Use GIS as a technology to capture and manage campus assets down to the room level! The Spatial Information Management System (SIMS) maintains campus information about utilities, rooms, A/V and other important assets. In addition, a Web GIS can disseminate facility information and reports.

TH26 Virtualization: Going the Distance on College Campuses

Leigh Buchwald, Supervisor, Citrus Community College

An overview of how Citrus College turned to virtualization and thin clients instead of PCs to expand the number of available computers on campus, at a lower cost. This also dramatically reduced computer maintenance and related IT staff time.

IT IN CHANGING ECONOMIC TIMES

Proactive IT management and technology strategies to survive and thrive in uncertain economic conditions. Identifying IT management opportunities to do more with less.

W01 Good-bye Paper! How to Get 30,000 Students to Apply Online

Mark Mikelat, Admissions Manager, Admissions and Records, Long Beach Community College

People can be become addicted to their paper: They need their fix of paper forms and applications. Learn to break the cycle of addiction! This powerful, practical and engaging session will outline ways to intervene in your institution's paper addiction.

W07 Exploring and Building Effective Vendor Partnerships for IT

Jorge Mata, Chief Information Officer, Los Angeles Community College District

Being proactive about vendor relationships is not only advantageous; it is an essential attribute of a successful IT organization. IT managers work with vendors not only to negotiate better contracts for financial advantage, but to partner on technology development initiatives and influence sustainable solutions in a dynamic marketplace.

TH23 If You've Got It, Use It! Low-Cost Strategies That Improve Service

Christina Cross, Director of Instructional Technology, with Christie Smith, Director of Course Design, Lone Star College System

This session will describe how LSC Online was able to improve its support level to faculty with very little financial investment by leveraging technology and distributing staff among different campus locations while retaining central collaboration.

LEADERSHIP CHALLENGES AND OPPORTUNITIES

Informed strategies and leadership approaches that respond to the rapidly changing environment in which campus technology leaders work. Technology and services for new organizational models.

W14 Electronic Dashboarding and Strategic Planning: A Marriage Made in Heaven

Iva Bergeron, Assistant to the President for Planning and Institutional Improvement, with Bobbi Dunn, Programmer Analyst, Lincoln Land Community College

How can electronic dashboarding engage a community college in its strategic planning processes? This session illustrates one community college's attempt to make internal and external stakeholders aware of the progress in achieving its strategic planning goals. The presenters will provide examples of the performance indicators and scorecards that were utilized in building the electronic dashboard.

TH17 IT Leadership: Building a Better IT Project and Support Model

Bill Balint, Chief Information Officer, Indiana University of Pennsylvania (IUP)

Higher education executives are looking to IT to help fill gaps created by diminishing staff and budget, while often demanding that IT sacrifice its own staff and resources. IT leaders at Indiana University of Pennsylvania (IUP) are responding with specific strategies and tactics that are producing high levels of success despite unprecedented IT budget and staff reductions.

TH21 How to Jump the Curve and Raise the Bar for Your IT Group

Thomas Hoover, Director of Instructional Technology Support, with Gerard Flynn, Director of Technology and Learning, Pepperdine University

Pepperdine University has recently gone through an exercise in trying to move the IT department from a good department to a great department—one that creates and communicates real value and is focused on business outcomes and values. The presenters will share successes and challenges in this transition.

PEDAGOGY AND INSTRUCTIONAL RESOURCES

Web 2.0 apps, digitized education resources and best practices for instruction that combine to move teaching and learning on college and university campuses to a new level. Digital formats, social software tools and mobile strategies that increase student connectedness cost effectively.

W03 Evidence-Based Use of Mobile Technology in F2F Blended and Online Instruction

Scott Hamm, Director of Mobile Learning Research, Abilene Christian University with Tina Powers, Instructional Designer and Curriculum Specialist, Abilene Christian University

For three years, beginning in 2008, Abilene Christian University has deployed mobile devices. This past year, ACU examined the iPad as a carrier of digital text. Because the integration of technology into academic programs does not in itself guarantee improved educational outcomes, ACU has developed an evidence-based approach to mobile learning strategies for research, assessment and integration.

W06 Beyond the eTextbook: Writing Mobile Web Apps for the Liberal Arts

Lisa Lewis, Professor, with Ian MacInnes, Professor and Chair of English, and Aaron Miller, Associate Professor, Albion College

While major publishers emphasize eTextbooks, experience suggests that a smaller and more personalized instructional model can succeed in a mobile environment. The session describes a process for developing targeted mobile web apps including design and format, pedagogy, and coding challenges.

W09 The Book Stops Here: Electronic Materials are Changing Textbook Adoptions

Christie Smith, Director of Course Development, Lone Star College System

Lone Star College-Online will share the challenges and successes of course development in partnership with electronic content providers to eliminate traditional textbooks and provide cost savings to students.

TH19 The Growing Role of Mobile Learning Systems in Graduate Management Education

Owen Hall, Jr., Professor, Pepperdine University

Globalization is bringing about a radical rethinking of the content and delivery of graduate management education. This presentation examines evidence of the growing effectiveness of mobile learning technologies.

TH22 Creating Sustainable Learning for New Digital Adult Learners

Deborah LeBlanc, Associate Professor, Full-time Faculty, National University

The presenter explores ways to support learning using technology. Higher educational instructional delivery systems have changed forever; however studies show that many adult learners and educators are lagging in their acquisition of sustainable skills and abilities needed in the new digital age. The presentation suggests useful approaches to and applications of digital learning.

TH25 ePortfolios in Undergraduate and Graduate Teacher Education Programs

Mike Ramirez, Assistant Professor of Education, with Steve Pillow, Assistant Professor of Education, and Kimberly Humerickhouse, PERK Grant and Testing Coordinator, MidAmerica Nazarene University

The presenters will give examples of how they are using Google Sites to create ePortfolios in undergraduate and graduate education programs. They will highlight the journey from a traditional paper portfolio to the electronic format. The session will also provide information on how these ePortfolios are helping meet program goals.

EXHIBIT HALL

The Campus Technology Forum Exhibit Hall is where attendees can gather to see the latest products and services from participating technology vendors. Attendees traditionally enjoy this busy, interactive environment with lively discussions of new technologies, networking opportunities, poster sessions and technology classrooms that offer detailed product demonstrations and drill-down information.

EXHIBIT HALL SCHEDULE AND SPECIAL EVENTS

Wednesday, July 28

12:00	– 3:30 pm	Exhibit Hall Open
12:00	– 1:00 pm	Lunch
2:00	– 3:00 pm	Poster Sessions
5:00	– 6:30 pm	Exhibit Hall Reception

Thursday, July 29

12:00	– 3:30 pm	Exhibit Hall Open
12:00	– 1:00 pm	Lunch
2:00	– 3:00 pm	Poster Sessions

For a complete listing of Poster Sessions, go to: www.campustechnology.com/ctforum

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Exhibitors as of 06/28/11
For current list of exhibitors go to campustechnology.com/ctforum.

HOTEL INFORMATION

Hilton Long Beach & Executive Meeting Center
701 West Ocean Boulevard
Long Beach, CA 90831
562.983.3400

Special attendee rate: $169
Booked by: August 29, 2011

The Hilton Long Beach & Executive Meeting Center has reserved a special room rate of $169 single/double for Campus Technology Forum attendees. Attendees must book their accommodations by August 29, 2011, to receive the discount. After that date regular room rates will apply.

Rooms at the Hilton Long Beach & Executive Meeting Center in the Campus Technology Forum Block also include the following:

- Complimentary in-room internet connectivity
- Discounted validated self-parking of $8.00

To Make Reservations
To book your room, please contact the hotel at 1-800-HILTONS and mention that you are with **Campus Technology Forum** to receive the special group rates.

By phone: 1-800-HILTONS (Mention Campus Technology Forum to receive the special rate)

Online: Go to the travel page at campustechnology.com/ctforum

AIR TRAVEL DISCOUNTS

American Airlines
American Airlines is offering discounts to Campus Technology Forum attendees for travel to greater Los Angeles area airports between September 24 and October 2, 2011. Mileage members can receive credit for all American miles flown to attend this conference. To take advantage of these discounts, please call toll-free, or have your travel agent call: **American Airlines: 1-800-433-1790, reference number #1491AW**. To book your discounted ticket online go to www.aa.com and use the discount reference number above as the aa.com promotion code.

RENTAL CAR DISCOUNT

Avis Rental Car
Avis Rent-a-Car is offering a discount on car rental for Campus Technology Forum attendees. To receive the discounted rates, call **Avis at 1-800-331-1600 and use the Avis Worldwide Discount (AWD) number D005872**.t

ENTERTAINMENT

The Hilton Long Beach Executive Meeting Center is located adjacent to the World Trade Center Long Beach on Ocean Boulevard in the heart of the business district. It is within walking distance, of the Long Beach Aquarium of the Pacific, Port of Long Beach and Southern California's best beaches.

REGISTRATION INFORMATION

Save $100 when you register before 8/26/11!

HOW TO REGISTER

SECURE WEB REGISTRATION AT:
campustechnology.com/ctforum

Online registration is transacted via secured server in order to safeguard your private information.

Phone: **850-219-9600** (9:00 am – 5:00 pm EDT - credit card payment only)

Mail: **Download and print the registration form at campustechnology.com/ctforum and send to:**

Campus Technology Forum Registration
11471 Timberlane Road, Suite 125
Tallahassee, FL 32312

REFUND AND CANCELLATION POLICY

A 100% refund less a $100 processing fee will be given for all cancellations requested by August 26. After August 26, no refunds will be given; however, all registrations are transferable to colleagues and associates with written authorization from the original registrant.

TEAM REGISTRATION DISCOUNTS
SAVE $200 BEFORE AUGUST 26!

When three or more people from a single school or organization register at the same time, you can realize savings of up to $200 per person when you register by 8/26/11, and $100 per person after. Please contact Sara Ross at sross@1105media.com for more information.

REGISTRATION DEADLINES

Early Registration Discount Deadline: August 26, 2011

REGISTRATION QUESTIONS?

Phone: **850-219-9600** (9:00 am -5:00 pm EDT)

E-mail: **CTForum@1105media.com**

Online: **campustechnology.com/ctforum**

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REGISTRATION PACKAGES

Conference Registration

Only $599* through August 26

*Early Bird Savings. $699 after 8/26/11.

- Poolside Reception and Attendee Networking
- Healthy Start and Morning Stretch on Wednesday and Thursday
- All conference sessions
- Keynote and general sessions
- Access to Exhibit Hall
- Exhibit Hall Reception
- Poster Sessions
- Lunch Wednesday and Thursday
- Refreshment breaks

Pre-Conference Workshops and Conference Registration

Only $799* through August 26

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- Morning and Afternoon Workshops
- Poolside Reception and Attendee Networking
- Healthy Start and Morning Stretch on Wednesday and Thursday
- All conference sessions
- Keynote and general sessions
- Access to Exhibit Hall
- Exhibit Hall Reception
- Poster Sessions
- Lunch on Tuesday, Wednesday, and Thursday
- Refreshment breaks

Complete Conference and Hotel Package

Only $1,449* through August 26

*Early Bird Savings. $1,549 after 8/26/11.

- 3 nights hotel (Monday-Wednesday) at the Hilton Long Beach & Executive Meeting Center(room and tax only)
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- Poolside Reception and Attendee Networking
- Healthy Start and Morning Stretch on Wednesday and Thursday
- All conference sessions
- Keynote and general sessions
- Access to Exhibit Hall
- Exhibit Hall Reception
- Poster Sessions
- Lunch on Tuesday, Wednesday, and Thursday
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STUDENT SYSTEMS & SERVICES

University of Toledo

Project: Access Adaptive Technology Virtualization
Project lead: Angela Paprocki, division director of student success and retention and director of the Office of Accessibility

Virtual computer laboratories have grown increasingly common on university campuses, freeing up classroom space and allowing students to access specialized software from anywhere with an internet connection.

The **University of Toledo** (OH) has gone one step further by extending that capability to disabled students who require assistive technology. According to the UT team, the Access Adaptive Technology Virtualization project marks the first-ever effort to create a statewide virtual lab with assistive software for disabled students.

Technologies used:
Atomic Learning
Bluehost
Cambium Learning
Freedom Scientific
GW Micro
Nuance Communications
Texthelp Systems
VMware

Hearing- and sight-impaired students and individuals with learning disabilities often can't afford assistive software, so they have to use specific computers in labs on campus to get their work done. "When we became aware of virtual lab technology on the UT campus, we thought, wouldn't it be great if our disabled students had the same opportunity as other students to go sit in Starbucks with their laptop and access the tools they need to do their work?" says Angela Paprocki, division director of student success and retention and director of the Office of Accessibility.

In early 2010, Paprocki and Toni Howard, student service coordinator/manager, applied to the state for funding to implement various adaptive software titles in a virtual lab environment. After determining that most assistive software titles could run in a virtual environment, the UT development team received a grant from the state to develop, test, and expand the project. So far, the Access project has received $320,000 in state funding.

Ten test users on the UT campus are working with the Access system. Users access the virtual lab via VMware's View client, simply authenticating from a browser window into a virtual desktop. The project team is also designing USB keys that will automatically access the lab when plugged into a PC.

The software tested includes Cambium Learning's Kurzweil 3000 Pro and Texthelp Systems' Read&Write Gold solutions for individuals with learning difficulties, such as dyslexia and attention deficit disorder. For users who are blind or have low vision, the project is also testing Freedom Scientific's JAWS and MAGic and GW Micro's Window-Eyes screen-reader software, as well as Nuance Communications' Dragon NaturallySpeaking speech-recognition software.

THE ACCESS TEAM (clockwise from left): Brooks Clensy, Andrea Engle, Toni Howard, Andrew Gates, Angela Paprocki, Rick Suttles.

A web-based project dashboard (*ohioaccess.org*), hosted by Bluehost, provides bug reporting via an integrated help desk application; social media features such as Facebook integration; and information regarding the project itself. Interactive software training from Atomic Learning helps new users get up to speed.

The Access team holds regular meetings with the user group to gather feedback and ideas for new features. At these meetings, the value of the project becomes obvious, says Paprocki. "The students' feedback has been driving the changes, and they are thrilled about it," she says. "They recognize this is a huge improvement for them."

The team also recently opened up access to the dashboard to the vendor community. "They expressed interest in the project," explains software developer Andrew Gates, "so we put a system in place where they can upload official training materials and they can see our help desk tickets to get a better idea of issues that arise."

While the original project vision involved only the UT campus, the Access team soon realized that disabled students at other universities around the state could also benefit from the system. So UT has partnered with students at **Ohio University** in Athens to test remote access. Once that phase of the project wraps up in September, the next step is to address financial sustainability, including the possibility of a consortium of Ohio's universities each paying a percentage of the costs on a monthly or annual basis. Another option is to include the state's K-12 school system.

Besides the increased convenience for students, one potential benefit to universities involves cost savings from software licensing. Instead of each university purchasing its own copies of assistive software, the virtual lab could license as many as

needed by the statewide community. "We've had lots of conversations with vendors about licensing," Paprocki says. "We moved to server-based licensing with a limit of 40 concurrent users." This means that campuses in a consortium could eliminate their own copies of the licensed software, and access the up-to-date versions in UT's virtual lab instead. (Some campuses are four or five releases behind because they can't afford to upgrade, Paprocki points out.)

Paprocki notes that the virtual offering could also help smaller schools comply with the Americans With Disabilities Act. "Many do work-arounds and provide only the bare minimum of support," she says. "This would ensure broader availability and access even on small campuses."

University of Montana

Project: Academic Planner
Project leads: Sharon O'Hare, executive director, Office for Student Success; Loey Knapp, associate CIO; Jon Adams, lead programmer

Two years ago, on a hike beside beautiful Flathead Lake in northwest Montana, the **University of Montana**'s Sharon O'Hare, executive director of the Office for Student Success, and Associate CIO Loey Knapp found themselves brainstorming about a new academic planner app to help students map out course selections for their four-year academic experience.

Technologies used:
SunGard Higher Education

"Loey started talking about adding tools to allow advisers and advisees to communicate better," O'Hare recalls. "I was huffing and puffing from the hike, but I turned to her and said, 'That is an excellent idea. It is exactly where we need to head.'"

WITH THE ACADEMIC PLANNER, students can plan in advance and confer with advisers electronically, so that their face-to-face meetings are more productive.

Photo by Gordy Pace

The Academic Planner provides multiple ways to search UM's course offerings and allows students to build an unlimited number of alternate course schedules.

Flash forward to 2011. Now, every freshman initiation at UM includes training on how to use the web-based Academic Planner, which was built in-house with open source tools. In two years, more than 13,000 plans have been created. The developers say tight integration with the course-catalog software and the use of social media tools created a winning combination of a familiar interface and enhanced planning functionality.

Knapp and O'Hare saw automating the planning process as a way to improve student retention. Prior to the app's launch, many students would show up unprepared for meetings with academic advisers, O'Hare says. The two parties would spend their time leafing through the course catalog and jotting down notes on potential courses. They couldn't easily record their progress or store adviser comments for review when discrepancies arose.

The Academic Planner addresses these issues by allowing a student to plan in advance and confer with the adviser electronically, so that their face-to-face meeting can be much more productive. They can talk not just about the next few semesters, but the bigger picture of a four-year plan—as well as possible internships and graduate school. "That productivity gain is what is revolutionary about this tool," O'Hare says.

According to Knapp, early input from students and advisers has shaped the product's development. "Besides student user groups, we set up an adviser user group that gives us ideas and help get buy-in from faculty," she says. "Sometimes students embrace technology faster than faculty do."

Jon Adams, the lead programmer, says that no comparable commercial offerings were available when the UM team started building the application. Integration with the course-catalog module of SunGard Banner was crucial and probably one of the biggest challenges from a programming standpoint, he says.

Thanks to this integration, when students run their mouse over a course title, a course description pops

up in a window, while color-coded visual tools signal schedule conflicts and course-requirement warnings. Students can add a course to the plan, view or print the resulting schedule, and save it to a database for future use. The tool provides multiple ways to search and filter UM's course offerings and allows students to build an unlimited number of alternate course schedules.

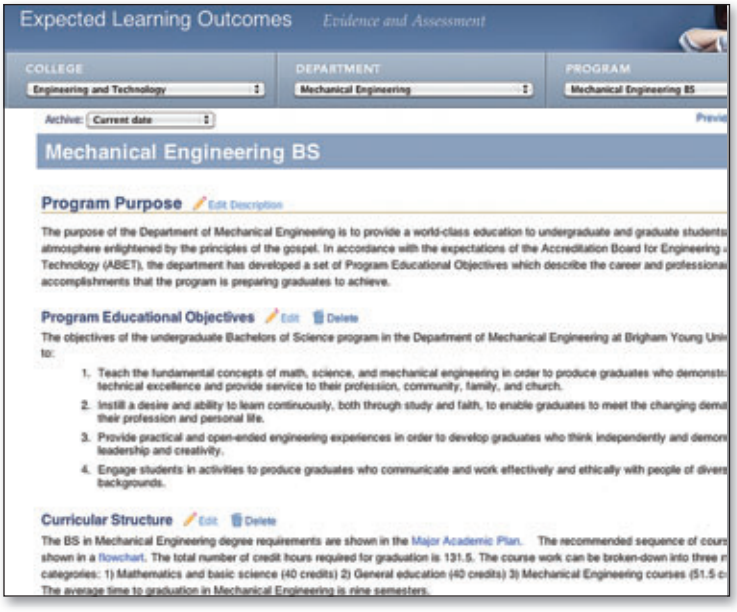
Once a plan is created, a student can post it for an adviser's review and comments. The adviser is linked to the student's profile, which includes information about his academic record. If multiple advisers are involved, an "advising forum" allows for collaborative advising. "I do think the addition of social media features has made it much more interesting," Knapp says.

The introduction of student profiles and comment sections for advisers makes students very comfortable with the app concept, adds Adams. Its look and feel are similar to the web 2.0 applications that they use every day, he says.

While the app doesn't replace face-to-face meetings, "many students do prefer to contact advisers electronically," notes O'Hare. "It is the environment they prefer instead of hunting down advisers in person. This is, to them, more friendly."

Future plans for the app include a feature that would allow students to push a button to send their finished plan from Academic Planner directly into the registration module in Banner. Developers also aim to feed data from the app to administrators, to help with long-range planning such as projecting how many sections of different courses are needed. Because the Academic Planner is an open source tool, Adams says, UM is also looking at ways to make it more generic before submitting it to open source organizations, so other institutions can take advantage of its features.

O'Hare stresses that it is difficult to measure the app's impact on retention because so many variables are involved. "But we look at what makes sense," she says, "and students being able to better plan their four years here with their adviser is an obvious advantage."



BYU'S LEARNING OUTCOMES website allows faculty to publicize exactly what they are trying to help students learn in a particular course.

ADMINISTRATIVE SYSTEMS

Brigham Young University

Project: Learning Outcomes Website
Project lead: Jeffrey Keith, associate academic VP

Technologies used:
Developed in-house

On most campuses, learning outcomes have traditionally been associated with accreditation visits or other reporting functions that are designed to assess courses or academic programs retrospectively—and are intended for a limited audience. Today, there's a growing movement to make learning outcomes central to a drive for continuous improvement linked to strategic institutional goals. At **Brigham Young University** (UT), a public website has put learning outcomes at the forefront of the institutional mission, course planning, and more. It's a mechanism for change, not just for generating reports, and provides data that are accessible to stakeholders at various levels.

Developed in-house, BYU's Learning Outcomes website is an online tool that displays and correlates program- and course-level learning outcomes. "This tool now allows faculty to specify exactly what they are trying to help students learn in their particular course," explains project lead Jeffrey Keith, BYU's associate academic vice president. "More importantly, these intentions can be pulled into our online catalog as students contemplate which classes they want to register for each semester. Customization of outcomes by each faculty member is encouraged."

The key to the success of the website lies in a tradition of communication and disclosure at BYU. Several years ago, the university decided to move program-level learning outcome statements (generated to satisfy accreditation requirements) online. Administrators quickly recognized the opportunity to share the data more widely, and made the learning outcomes available for review by faculty and students.

Initially, the information was provided in a wiki, but the university eventually transferred it to a database-driven application. Data from the Learn-

ing Outcomes site can now be linked to other learning-management and assessment tools using web services, and learning outcomes can be incorporated into relevant applications throughout campus: the course catalog, the registration system, course syllabi (including the university's online syllabus system), student ratings, and other components of the BYU Learning Suite.

Now, 2,459 courses (27 percent of all BYU courses) have at least one course-level learning outcome, and most have between five and eight. More than 11,200 course-level learning outcomes have been created and included on the site. One striking measure of the website's success is its acceptance by students: At least 65 percent of BYU students use or are aware of learning outcomes in their academic planning.

With Keith's leadership, developers at BYU are not only enhancing the Learning Outcomes site but are producing related tools. For example, a new product allows faculty to easily tie each student assessment (e.g., test, project, performance, etc.) to each of a course's learning outcomes. Because the course-level learning outcomes are tied to program-level outcomes, and program-level outcomes are linked to the university's core themes, an individual assessment can be reviewed at the highest level as evidence of achievement. In the next few months, BYU will release an exam-building tool that will allow linkage in the opposite direction: Course-level learning outcomes will be able to be tied to an individual question or test item.

IT INFRASTRUCTURE & SYSTEMS

Purdue University

Project: HUBzero Platform for Scientific Collaboration
Project lead: Michael McLennan, senior research scientist

Researchers at **Purdue University** (IN) have developed a veritable Swiss Army knife of web tools for research collaboration. Known as HUBzero, it's a unique, open source platform for creating websites that connect research communities and provide

MEET THE JUDGES

As part of the evaluation process for the Campus Technology Innovators award program, entries were reviewed by our Innovators Judging Committee, a group of higher ed tech leaders, many of whom are former Innovators themselves. While some committee members had projects nominated for this year's awards, they did not judge their own entries. Final winners were chosen by our team of editors.

Keith Bailey
Director, e-Learning Institute
Penn State University

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Senior Academic Technology Officer
Marist College (NY)

Jan Biros
Vice Provost, Budgeting, Planning, and Administration
Drexel University (PA)

Judith Boettcher
Consultant, Author, and Analyst
Designing for Learning

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Director, Center for Online Learning
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Vice President for IT
Montclair State University (NJ)

Ronald Danielson
Vice Provost for Information Services and CIO
Santa Clara University (CA)

Kamran Khan
Vice Provost for Information Technology
Rice University (TX)

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Purdue University (IN)

Anna McFadden
Director, Academic Engagement and IT Governance; Professor, Department of Educational Leadership and Foundations
Western Carolina University (NC)

Darryn Ostrander
Director of Instructional Technology and Distance Learning
Darton College (GA)

Nora Reynolds
Executive Director, Division of Continual Learning
University of North Carolina, Greensboro

Jill Rulfs
Associate Professor and Director, Department of Biology and Biotechnology
Worcester Polytechnic Institute (MA)

Chetan Sankar
Professor of Management; Director, Geospatial Research and Applications Center
Auburn University (AL)

Jennifer Spielvogel
Vice President, Institutional Planning and Effectiveness
Cuyahoga Community College (OH)

Susanna Wong Herndon
Director, Technology Enhanced Learning, Center for Teaching and Learning
University of Texas, Austin

THE PURDUE HUBZERO TEAM (clockwise from left): George B. Adams III, Michael McLennan, Mark Lundstrom, Gerhard Klimeck.

instant access to simulation tools and computational resources. Through HUBzero sites, researchers can access gateways to the resources and tools they need—through a familiar browser interface.

"We've created a cyberinfrastructure solution that can be used out of the box for research, education, and collaboration," explains Michael McLennan, senior research scientist and director of the HUBzero Platform for Scientific Collaboration. "It's not a black box, but rather an open source platform that can be extended and customized to support many different fields."

Technologies used:
Developed in-house

The HUBzero software is based on the system behind nanoHUB.org, a project launched in 2002 with funding from the National Science Foundation and Purdue University that is aimed at making collaboration and computational tools for the nanosciences more readily available. The overwhelming popularity of nanoHUB.org—it now has more than 170,000 users worldwide—made it clear to researchers at Purdue that the basic nanoHUB.org platform could be leveraged to serve many other research communities. Developers pulled out the underlying technology, broadened its features to make the system applicable to a wider range of disciplines, and released an open source version of the resulting HUBzero software in 2010.

Each HUBzero site offers its community easy, centralized access to relevant tools. "HUBzero provides the framework for group collaboration, databases, repositories, simulation/modeling, and high-performance computing," McLennan notes. "Each hub is a one-stop shop for its community." HUBzero now supports more than 30 research communities, from biomedical modeling to electric vehicles. Other hubs have been built around topics such as cancer care, the spread of pollutants in the environment, volcanoes, and engineering earthquake-resistant buildings and bridges.

HUBzero combines the best of web 2.0 functionality with middleware that makes it possible to incorporate grid, scientific computing, and supercomputing resources. Though the platform is used to deploy very high-end computing tools, incorporating them can be as easy as posting a YouTube video. Built-in social networking functions lend a familiar Facebook-like feel to professional communications. And HUBzero's Rappture toolkit helps turn research codes—written in C/C++, FORTRAN, Java, MATLAB, and other languages—into graphical, web-enabled applications.

While it's possible to cobble some of this functionality together with commercial web software, HUBzero integrates everything in a single package. Add the access to research tools plus functions such as tracking the use of tools (useful for quantifying the impact of a project) and citation tracking, and you have something quite different—and powerful. In addition, as an outreach effort, Purdue offers hub-building and hub-hosting services.

HUBzero is now supported by a consortium of Purdue, **Indiana University**, **Clemson University** (SC), and the **University of Wisconsin**. Researchers at **Rice University** (TX), the **State University of New York** system, the **University of Connecticut**, and the **University of Notre Dame** (IN) are using hubs. And HUBzero is rapidly gaining worldwide acceptance: In 2010, the first annual HUBbub conference drew attendees from around the globe.

Penn State University

Project: ELIMedia Server
Project lead: Bryan Ollendyke, manager of instructional technology

The floodgates are open, and digital media are literally streaming into today's learning systems. With that deluge come two critical challenges to the management of digital assets: copyright and accessibility compliance. What will ensure that media assets are created in ways that keep institutions compliant? And how can this be achieved without overburdening instructional designers, developers, and faculty?

Technologies used:
3Play Media
Adobe
Drupal
LongTail Video

For the College of Arts and Architecture at **Penn State**, the answer lies in ELIMedia Server, an application developed by the college's e-Learning Institute to handle the integration of digital media into its online courses. The system was envisioned in 2010 by Bryan Ollendyke, manager of instructional technology at the e-Learning Institute, after he watched instructional media developers

THE ELIMEDIA SERVER makes ADA and copyright compliance much more straightforward, says Penn State's Bryan Ollendyke.

struggle with various integration issues. Ollendyke wanted to make the process easier and more efficient.

"I originally took this on as a way of lowering the cost of entry, if you will," explains Ollendyke. "Before, our learning design team was having to troubleshoot HTML and Flash object code. My goal was to alleviate that, so that they could simply upload their media to the system, which would return a clean code that they could use without having to spend so much time on technical issues. It's making their lives a lot easier. And it especially makes ADA and copyright compliance much more straightforward."

Now, course developers can upload any type of asset using an open source Drupal-based interface. The system guides them to provide the metadata necessary to operate under fair use, Creative Commons, or TEACH Act provisions. Files requiring transcription can be sent to 3Play Media for ADA-compliant closed captioning. ELIMedia Server then automatically transfers uploaded files to an Adobe Flash Media Interactive Server, where all media assets are indexed and become searchable by any developer or faculty member. Any asset can be incorporated into a course by simply copying and pasting a short code generated by the ELIMedia Server application. LongTail Video's JW Player is used to play any of the file formats used in the system. All in all, ELIMedia Server has provided an end-to-end solution for managing digital media assets, starting with the submission of a media request and ending with a simple embed code.

To date, more than 2,000 media assets have been processed through Penn State's ELIMedia Server.

Keith Bailey, director of the e-Learning Institute, sums up the impact of ELIMedia Server for his organization: "We want to manage [accessibility and copyright compliance] globally, so that every one of our online courses meets current standards. This system encompasses all of that for us: As designers put materials or media elements into the system, they include all the information that ensures compliance."

ELIMedia Server represents a "store once, use many times" strategy that improves efficiency by centralizing all media in a single location. To date, more than 2,000 media assets have been processed through the system and used in online courses. As digital media continue to proliferate, Bailey says, "Our hope is that this solution will become more widely adopted at Penn State and beyond, serving as a best practice for other e-learning initiatives across the country."

EDUCATION FUTURISTS

Duke University School of Nursing

Project: Immersive Virtual Poster Sessions
Project lead: Mary Barzee, iNET program coordinator

When leaders of the Innovative Nursing Education Technologies (iNET) group began planning their annual conference last year, they talked about adding a poster session.

"Then we realized that a traditional scientific poster session is not very innovative at all," recalls Mary Barzee, iNET program coordinator for **Duke University**'s (NC) School of Nursing. (iNET is a federally funded collaborative effort among the nursing programs at Duke, **Western Carolina University**, and the **University of North Carolina at Charlotte** to integrate technology into nursing education.)

Barzee was also concerned because some nursing educators who wanted to attend reported having their travel budgets slashed. "We started talking about the possibility of a virtual interactive poster session to allow people to participate remotely," she says.

Unafraid to try something new, Barzee and the iNET team researched the use of avatars for presentations in online virtual environments. The goal was to evaluate whether a traditional poster session could work in this new arena.

Last August, after months of preparation, iNET hosted what was perhaps the first-ever immersive 3D poster session. Eight presenters and 25 attendees participated, all represented by avatars. "This was all new to us," Barzee says, "yet it felt quite natural. People made their presentations with laser pointers, with visuals on screens behind their avatars."

Technologies used:
Dropbox
Microsoft
Twitter
VenueGen

The team's initial research into virtual environments wasn't promising. They looked at Second Life, but because iNET's target population has little experience with virtual worlds, ease of use was a concern. "We were so clumsy in that environment," Barzee recalls. "We realized it would take some time to get up to speed. Also, we were hoping for something more businesslike. We didn't want people to choose dragons as their avatars."

Undaunted by their first virtual experience, Barzee and the iNET team followed up on a tip about a nearby startup company. North Carolina-based VenueGen offers a browser-based 3D immersive meeting platform—sort of a cross between Second Life and GoToMeeting. Although it was still in beta testing at the time, VenueGen's product was easier to use than Second Life, Barzee says. "You start out in a seat, which removes the pressure of figuring out how to walk around, sit, and stand. Also, the avatars are more professional looking." Other pluses for iNET: VenueGen has a selection of businesslike settings, and attendees use their real names instead of invented screen names.

Overall, says Barzee, there wasn't much to lose: iNET could use VenueGen on a short-term basis, paying only a monthly subscription fee. For an organization that wants to host an unlimited number of meetings per month with up to 30 attendees, VenueGen charges $299 per month. Meetings are free for attendees.

During the preparation phase for iNET's virtual poster session, Dropbox was used to store and share posters and abstract submissions, so that the review committee, made up of faculty members from three university campuses, could all access the same information. In addition, the iNET team used its strong following on Twitter to publicize the event. (The Duke School of Nursing won a Campus Technology Innovators award last year for creating a Twitter soap opera to teach nurses about patient care, privacy, quality, and safety: *campustechnology.com/articles/2010/08/01/innovators-awards-2010-duke-university.aspx.*)

One advantage of the virtual meeting was that iNET was able to draw attendees from a broader geographic region, Barzee notes. In fact, four institutions that made virtual presentations would not have participated in a live event due to distance and cost. For the most part, though, presenters were a little apprehensive about the technology, she admits. "No one had used a virtual world or an avatar before, and some were presenting on their material for the first time," she says. "We did workshops with them and they did practice sessions with VenueGen representatives."

RESOURCES

For links to the products and vendors used in each of the Innovators projects, visit *campustechnology.com/innovators.*

Three virtual poster sessions were held simultaneously with a moderator in each room. Participants displayed their virtual posters (created in Microsoft PowerPoint), and spoke about their work using microphone headsets and a personalized avatar. Attendee avatars asked presenters questions about their posters and discussed healthcare, education, and technology. Besides being able to speak, the avatars also conveyed nonverbal gestures and facial expressions.

During the sessions, some familiar issues, such as attendees leaving the room during the middle of a presentation, took on new dimensions. Slightly annoying in real life, such departures are more pronounced in the virtual environment because the avatar simply disappears, as though it has been beamed up to the Starship *Enterprise*.

"This got us thinking about what is socially acceptable in a virtual world," Barzee says. "If there is a list of acceptable practices somewhere, we didn't find it."

The iNET team sent out surveys asking if participants would use the environment again. Many said yes, but others said they would like to attend but perhaps not present. "It was time-intensive to prepare for," Barzee says, "and it was a little anxiety-inducing for the presenters. But it was exciting. We would definitely do it again." CT

iNET VIRTUAL POSTER PRESENTERS made their presentations with laser pointers, with visuals on screens behind their avatars.

__Meg Lloyd__ and __David Raths__ are freelance writers based in northern California and Philadelphia, respectively.

continued from page 21

may be able to check grades and register for classes.

"That's where the application is headed in the future—it's not there yet, but it's coming," says Shestack. "We have a whole team working on it. We have to be comfortable and confident that our security posture can protect the data on these devices."

Securing a mobile device presents different challenges from the well-established solutions for PCs. For starters, phones have lower processing power and limited battery life, so the security apps must be small. As a result, much of the "heavy lifting" must take place in the cloud, says Alicia diVittorio, director of marketing at Lookout, a startup that currently provides mobile security and antivirus protection for Android, BlackBerry, and Windows Mobile devices.

Lookout's solution, available free and in a premium version for Android, scans every app for malware and spyware, and offers such features as backup and restoration of data, a phone locator, and a remotely activated lock if the device is lost or stolen.

Schools can also adopt some fairly simple precautions of their own, as well as educate their campus populations about the dangers. For example, schools can insist that users password-protect their phones, and remind students to evaluate mobile apps before downloading them. Users should pay attention to who the developer is, the number of reviews the app has received, and whether the reviews are good.

Insist that users password-protect their phones, and remind students to evaluate mobile apps before downloading them.

Finally, users shouldn't log onto password-protected sites—their school's, say—while on a public WiFi network, where they may be vulnerable to eavesdropping sniffers that can read the data they send and receive.

"It's not just about their own personal information, but the entire network's," warns diVittorio. **CT**

Vanessa Hua *is a freelance writer based in Claremont, CA.*

RESOURCES

For links to the products and vendors mentioned in this article, visit *campustechnology.com/0811_productfocus*.

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Trendspotter

This Time Is Different

IT leaders must meet today's unique challenges with a new focus on technology engagement. By Mary Grush

In a recent interview with CT*, Timothy Chester,* ***Pepperdine University****'s (CA) vice provost and CIO—and a 2011 Campus Technology Innovators award recipient—explained why IT organizations must take an entirely new approach in these challenging times.*

CAMPUS TECHNOLOGY: In speaking about IT leadership, you've said, "This time is different." Why?

TIMOTHY CHESTER: The way we respond to the challenges we face as IT leaders has to change, because our circumstances are unique. The effects of the financial crisis will probably linger for many years. I don't believe the generous budgets that we enjoyed over the past 10 years will come back anytime soon.

And now, the cloud and social networks have decentered institutions in ways that suggest that they are less important than in the past. Notably, there is a big question about whether students can "do it themselves"—whether they can piece together the equivalent of a college education, and therefore make a traditional degree less important than it used to be.

For IT organizations there has been a decentering as well, because faculty, students, and staff no longer depend on IT for services the way they did five or 10 years ago. They can get all of these services from the cloud in a much easier, more efficient fashion.

As a result of all these factors, we *have* to think about approaching problems and opportunities in different ways. We no longer have the resources or degree of control that we enjoyed in the past.

CT: If IT organizations need to change, what might those changes look like?

TC: Most of the problems we face as IT leaders tend to be engagement problems rather than technology problems. We really add value as an IT organization when the use of technology intersects with a business need or desired outcome—whether it's a research need for a faculty member, an instructional outcome for a teacher, or a CFO's need to reduce costs.

We seem to add less value today through pure engineering efforts than we did 10 years ago. I stressed recently to my staff that, while good, reliable technology is a necessary condition for success, it's no longer sufficient for success. What tends to ensure success is the *way* we engage people in the use of technology. That requires a fundamentally different skill set from what has traditionally been emphasized in IT.

CT: To what extent is technology changing higher education?

TC: We all understand intuitively that technology is changing higher education, but the direction or pace of that change is not always clear. That's because we have generally used technology to replicate the traditional classroom model of learning, which has also been decentered by the cloud and social networks.

Once we move away from the traditional notion of a credit hour and the classroom lecture, and really concentrate on how students learn through collaboration—and learning outcomes supplant the credit hour as the building block of a college degree—technology will become incredibly meaningful. The combination of technology and a focus on learning outcomes is changing higher education for the better.


CHESTER

CT: Is this a good time to be an IT leader in higher education?

TC: Absolutely. Never before has IT mattered so much to higher education. But I think we have to change and focus on engagement around the use of technology as the most important thing we do. **CT**

Editor's note: Timothy Chester will give the keynote, "This Time Is Different: How IT Organizations Can and Must Change to Survive and Thrive in the New Normal," on Sept. 29 at the Campus Technology Forum conference in Long Beach, CA. For more information, go to campustechnology.com/ctforum.


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