Learning Management Systems: What's Next? p. 18

CAMPUS TECHNOLOGY

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CT 2011 CONFERENCE ISSUE

July 2011

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campustechnology.com Volume 24 Number 11

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Correction: In "Testing Times, Tested Tools," *CT* May 2011 (*campustechnology.com/articles/2011/05/01/testing-times-tested-tools.aspx*), Penn State's College of Engineering was mistakenly referred to as the College of Education. *CT* regrets the error.

Whither Higher Education?

Does college prepare students for jobs or for life? And does IT care?

I recently read—and highly recommend—Louis Menand's article in the June 6 *New Yorker*, entitled "Live and Learn: Why we have college." (*newyorker.com/arts/critics/atlarge/2011/06/06/110606crat_atlarge_menand*)

What spurred the essay, in part, was the "Academically Adrift" report from two sociologists, Richard Arum and Josipa Roksa. This study has received a lot of publicity for its claim that colleges are failing to teach students "to think critically, reason analytically, solve problems, and communicate clearly," primarily because of grade inflation and less-than-rigorous curricula.

In his essay, Menand posits that there are two theories about the value of a college education. Theory 1 believes that college is a sorting mechanism that uses a grading system to identify "intelligent people early on so that it can funnel them into careers that maximize their talents." According to this theory, Menand says, "college is a four-year intelligence test" that not only sorts people by their innate abilities, but also by their aptitudes for specific disciplines to ensure that the right people are in the right jobs.

Theory 2 believes that colleges should "expose future citizens to material that enlightens and empowers them, whatever careers they end up choosing." The idea here is that in a society where people are incented only to learn things that will get them the best possible job, it is college's role to expose students to thoughts and ideas that will make them more informed and culturally aware citizens. Menand points out that US higher education has been committed to both theories of college since 1945: "The system is designed to be meritocratic (Theory 1) and democratic (Theory 2)."

To my mind, the challenge of meeting both goals has fueled the recent criticisms of higher education—not only Arum's and Roksa's critique that colleges are failing in their responsibility to prepare our citizens, but other charges that colleges are not adequately readying students for the 21st century global economy.

Technology has a central place in this debate, and it's not just a utilitarian one. Technological tools have an obvious role in 21st century job preparedness, and they are also, aside from books, the main instrument for teaching critical thinking and problem solving—as well as one of the key conduits of an informed citizenry.

Yet campus technology leaders can do more than simply promote appropriate tool use. With all the challenges that higher ed faces—competition from for-profit institutions, the astronomical rise of tuition costs, brutal budget cuts, an impenetrable job market, and the increasingly basic academic needs of entering students—the argument about the role of higher education in society goes beyond Menand's twin theories. It goes to the heart of the future of our culture and our country. And campus technology leaders need to be doing more than providing the wires that facilitate the conversation. **CT**

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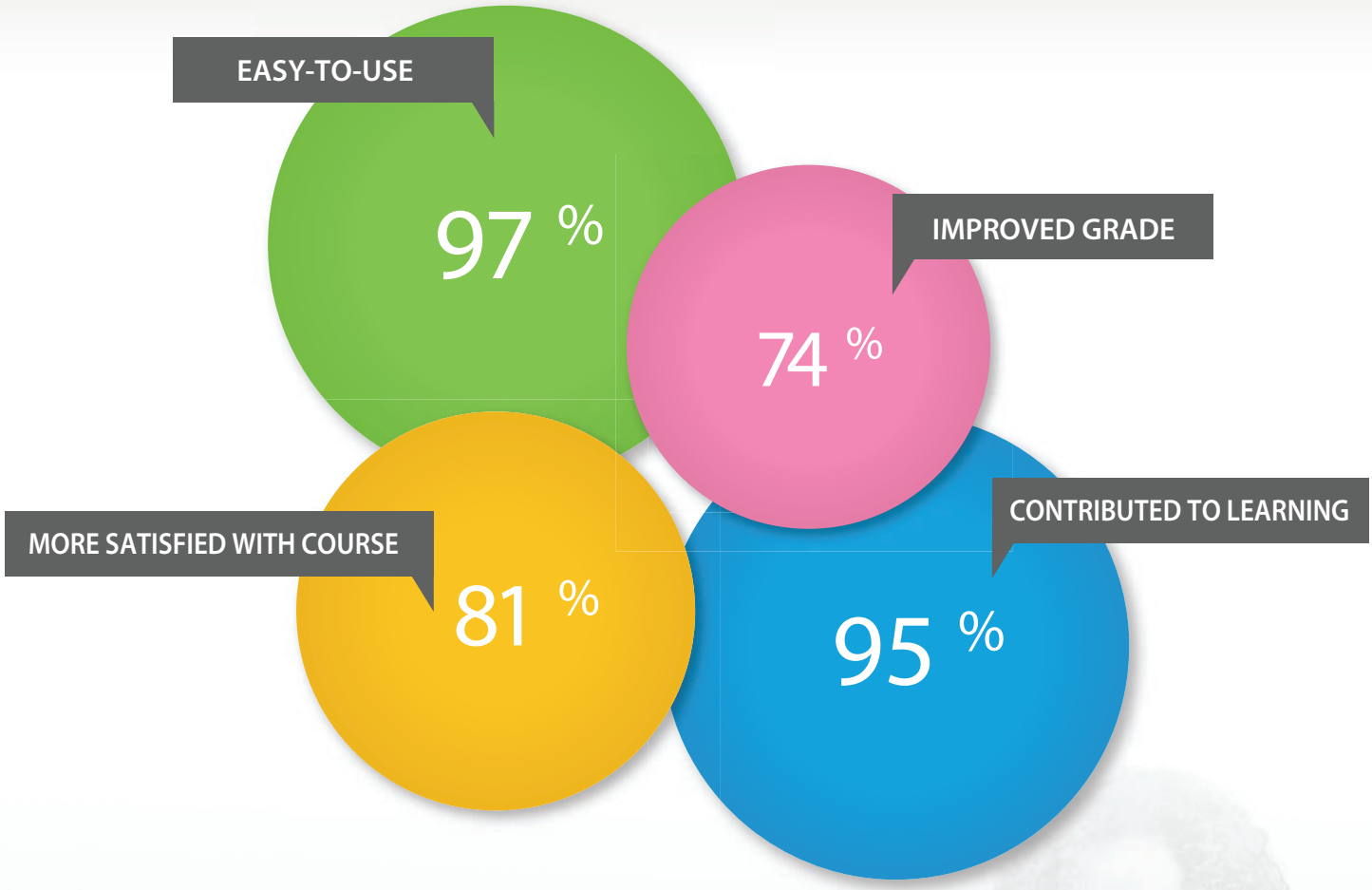

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Changing Demographics in Higher Education: The Case for Personalized Learning

Education technologists address the shifting demographics in higher education and talk about ways instructors can effectively leverage LMS technology to personalize instruction and better serve students.

Suffolk University: Communication, Collaboration, and Self-Service via the Cloud

Suffolk University's (MA) single sign-on cloud-based portal enables students, faculty, and staff to connect, collaborate, and access the information they need, when they need it.

Discover How to Lower Costs, Enhance Security, and Simplify Management With Virtual Desktops

California State University, East Bay streamlined the costs and complexities associated with managing desktop environments, and is now delivering more services to students, faculty, and staff, thanks to desktop virtualization.

BYO: A New Chapter in Device Management

Virtual computing can give your students the freedom and flexibility to get coursework done on the device of their choice. Find out how.

Trending Articles on *CT*

- **Taking Next-Gen Classrooms Beyond the Pilot** *campustechnology.com/0611_classroom*
- **Carnegie Mellon's Classroom Salon Encourages Collaborative Critique** *campustechnology.com/0711_salon*
- **Rethinking Technological Literacy** *campustechnology.com/0711_literacy*

Viewpoint

Is Higher Education Ready for "The Education Bubble"?

American higher education is facing the prospect of being the next bubble to burst. Technology is both a culprit and a promising ally.

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Association for Authentic, Experiential and Evidence-Based Learning
AAEEBL World Portfolio Summit
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Emerging Technologies in Content Delivery: eBooks and eReader Devices

Rob Kadel,
Supervisor, Generalist, Academic Training & Consulting, Pearson eCollege

Wednesday, July 27 – 11:15 am

Beyond Web 2.0: How Virtual Learning Environments Should Help Learners

Jeff Borden,
Senior Director of Teaching and Learning, Pearson eCollege

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TECHNOLOGY HAPPENINGS IN HIGHER EDUCATION

NEWS

TRIPLING ENROLLMENT. In line with its goal to increase enrollment from 10,000 to 32,000 students by 2025, **Ocean County College** (NJ) has contracted for services from Pearson eCollege. The institution plans to launch online programs to accommodate the planned growth. Under the new agreement, Ocean County has licensed Pearson's online LMS, LearningStudio, plus enterprise analytics services and a learning-outcomes manager to track learning objectives and goals. Pearson will also provide digital content and support services in areas such as course conversion, integration with the college's student information system, and student support and enrollment.

SOCIAL NETWORKING FOR RETENTION. Thanks to a $250,000 grant from Next Generation Learning Challenges, two **Carnegie Mellon University** (PA) faculty members will study whether their Classroom Salon social-networking site can help **University of Baltimore** students who are in danger of failing introductory courses or dropping out of college. Designed to spur readers' participation in discussions on articles and papers, Classroom Salon (*classroomsalon.org*) allows readers to add comments, annotations, and tags to passages in text that can be read by others. Project founders Ananda Gunawardena, associate teaching professor in the Computer Science Department, and English professor David Kaufer believe that at-risk students may benefit most from the site's collaborative functions and potential for personalized instruction. Read more at *campustechnology.com/0711_salon*.

MIT SLOAN'S E62 building uses a Crestron backbone to support an impressive array of A/V systems.

POWERFUL A/V. **MIT**'s (MA) most energy-efficient building, E62, isn't skimping on technological capacity. The new home for the Sloan School of Management has implemented DigitalMedia products from Crestron as the communications backbone to support A/V systems in eight classrooms and lecture halls, 40 study rooms, eight conference rooms, an executive dining room, and a lobby dining area. The DigitalMedia line includes switchers, transmitters, receivers, room controllers, and cabling. On a single shielded twisted-pair wire, the network can support a mix of digital and analog audio and video signals, including uncompressed 1080p high-definition video with a palette of a billion or more colors, 3D video, and 1,920 x 1,200 computer signals, as well as high-def digital audio, control, data, and Ethernet. Read more at *campustechnology.com/articles/2011/05/05/mit-lays-out-crestron-av-backbone-in-e62.aspx*.

DIGITAL TEXTS ON THE RISE. Acceptance of digital texts is way up, especially among users of iPads and other tablets, according to a report from market research firm Gartner. A full 94 percent of responding iPad/tablet users either prefer reading digital texts (52 percent) or find them as readable as printed texts (42 percent). In contrast, a large portion of responding laptop users (47 percent) said they find reading texts on screen more difficult than on paper. (The next-largest group among laptop users, 33 percent, said the experience was about equal to reading printed texts.) The report surveyed more than 1,500 end users in the US, UK, Japan, India, Italy, and China in the fourth quarter of 2010.

OPEN WORKSPACE. Teleplace has launched OpenQwaq, a new open source virtual-collaboration platform based on the company's flagship Teleplace product. OpenQwaq enables organizations to implement secure virtual workspaces, called OpenQwaq Forums, that function as online offices or meeting rooms where people can work and collaborate. Key features include drag-and-drop content sharing; support for sharing PDF files, Word documents, PowerPoint presentations, Excel spreadsheets, graphics, 3D content, and various other file types; collaborative text editing in real time; built-in high-fidelity VoIP, web conferencing, and text chat; and avatars and "laser pointer" controls. **CT**

For daily higher ed tech news, go to campustechnology.com/news

PEOPLE

NEW OCW PRES. The OpenCourseWare Consortium has named Anka Mulder as its new president. Mulder currently serves as the director of education at **Delft University of Technology** in the Netherlands; she succeeds Stephen Carson of **MIT**, who held the position for three years.

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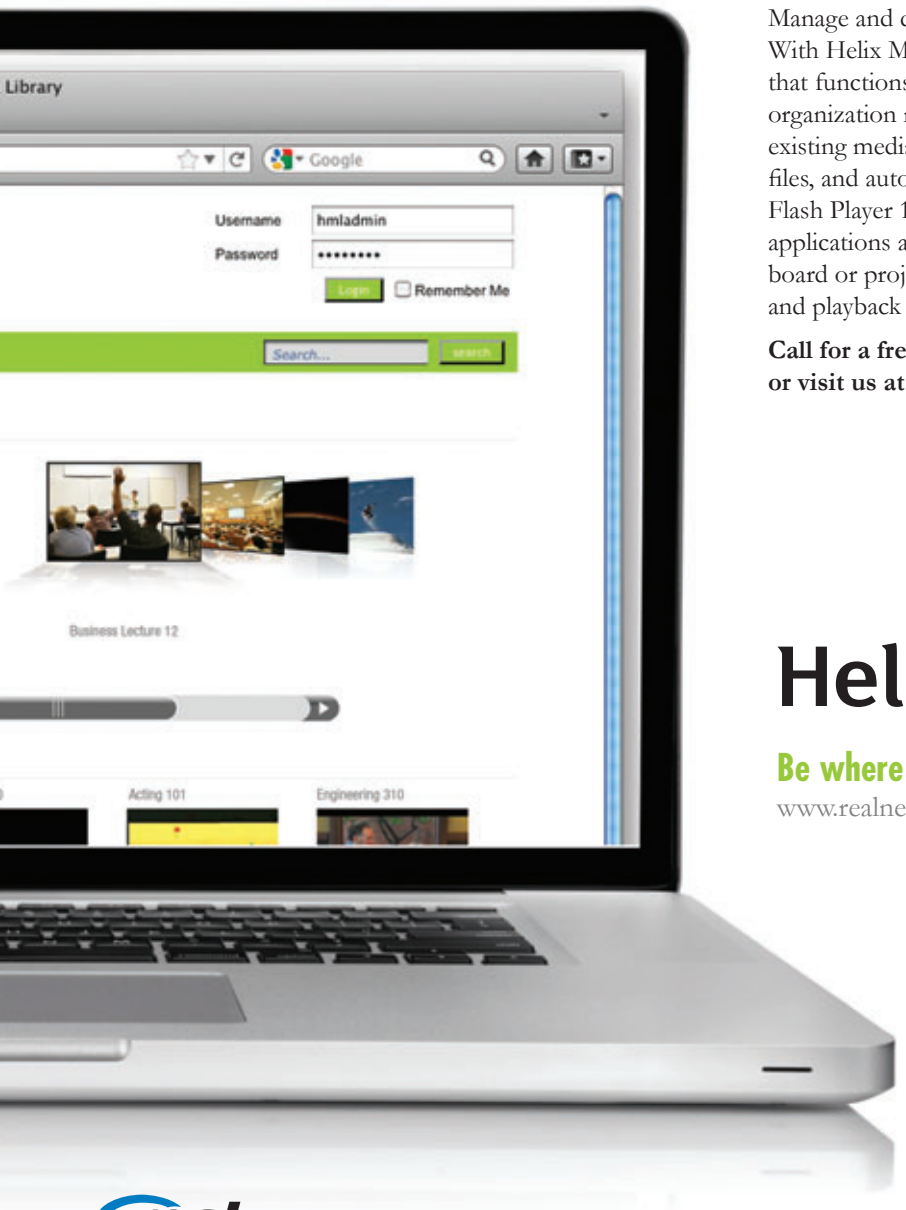

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IT'S FALL 2011 AND your college's Bio 101 class is filled to its 87-student capacity. More than half the students sit hunched over laptops taking notes. At everyone's feet lie backpacks containing one or two additional devices—cell phones, smartphones, iPods, iPhones, you name it—all of which require time and space on your wireless network. Now pull back and look at your entire campus. Buildings everywhere are filled with students, administrators, instructors, and myriad guests, all carrying multiple devices for which they expect wireless support. Does your network have what it takes?

It's a question that many IT administrators worry about late into the night, particularly as the number of mobile devices on campus continues to skyrocket. Fortunately, today's technology—specifically, 802.11n-capable wireless access technology—does makes it possible to equip your campus for today's intensive mobile culture.

Dean College (MA) and **Utah State University** both recently upgraded their wireless networks to the 802.11n standard. For Dean, upgrading its wireless capabilities was part of a complete network overhaul that included revamping the LAN connections and replacing the phone system.

"Before, as at many colleges, the infrastructure was not thought about really, so there was no planning, no development, no strategy," says Russell Prentice, director of information services at Dean. "After a while, systems were failing, mail would stop working intermittently, and networks would crash. People didn't have a good feel for the infrastructure, so quite a lot of people duplicated everything on paper."

Utah State, which started its wireless-upgrade process around four years ago, received its first shipment of 961 access points at the beginning of this year. The university's goal is to establish a wireless network that will also serve as its primary network, says Eric Hawley, CIO.

This means eliminating problems commonly associated with wireless networks, such as "network congestion, bandwidth latency, lack of coverage, devices that don't roam well, and the poor quality of service when you're running voice and video," explains Hawley.

Both schools have the ultimate goal of creating campuses that are almost completely wireless, with the exception of data centers and servers, which would remain wired. The 802.11n-standard access points (AP), which enable more device traffic to flow at higher speeds, are the means to that end.

With a data rate of up to 600 megabits per second, the n-standard APs achieve speeds up to six times that of their predecessors, 802.11a, b, or g, and they can support 50 to 100 client connections at once, even if those clients are using bandwidth-intensive applications that stream video or deliver voice over wireless LAN. They incorporate MIMO (multiple-input, multiple-output) antenna systems that can bounce radio waves off walls and other obstacles, and reach the desired receiving device from different paths, or spatial streams. Among other things, MIMO enables faster transmission and wireless access in places that were hard to penetrate with earlier wireless technology.

802.11n incorporates a new, third spatial stream, which Kevin Secino, global product marketing manager for mobility at HP, compares to opening a third lane on a highway.

"You get more traffic through three lanes than two," explains Secino. "You can think of this in a similar fashion. ▸

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We're able to transmit more data through three streams than two." The three-stream technology is also completely compatible with one and two spatial streams, as well as a, b, and g technology.

Band steering, a common feature of most access-point devices, helps to keep traffic flowing smoothly on all three spatial streams. Band steering is the process by which an AP detects when a client device is n capable and steers that device onto the 802.11n streams, so legacy devices can use the 802.11a, b, and g streams.

"Even if you have a device that supports 11n, it wants to stay on g if it can," explains Prentice. The Aruba APs installed at Dean force such devices onto n, freeing up space for other devices on the other bands. "If all the devices are trying to get to g, then it oversubscribes. This balances things out," he adds.

Network Architecture

Most access points utilizing 802.11n standards have comparable speeds and performance. As a result, when it came time to select a vendor, each college made its choice based largely on its specific situation. Dean College, for example, was replacing a legacy network that included "three different versions of wireless, none of which talked to each other," says Prentice. As a result, the school was looking primarily for stability.

"We can only change things every five years, if we're lucky," Prentice explains. "It had to be something that could be tried, tested, and be solid,"

Utah State settled on APs from Meru Networks that enable "a macro-cell, single-channel technology," Hawley says.

"Meru is really an RF [radio frequency] company, and they took a totally different engineering approach," says Hawley. Normally, access points have three channels to work with: 1, 6, and 11. Two APs operating on the same channel near each other can cause interference and quality degradation. In high-density areas where you might need more than three access points, it's tricky to architect the AP layout, and the overall effectiveness of your coverage is impacted. Meru APs are available in single or dual radio models, but its virtual-cell technology allows its APs to operate on a single channel without interference.

"We didn't think [the single-channel technology] would work," recalls Hawley, but, during a demonstration, Meru connected 500 clients to access points running on one channel in a 20- by 50-foot room and "blew density out of the water."

Hawley adds that running most of the campus on one channel makes setup easier, reduces the number of overall access points, and contributes to more stable roaming. It also enables the university to set aside a separate channel specifically for researchers without having to worry about interference.

Another feature worth considering is beamforming, which creates better coverage by optimizing the link between clients and APs. Included in many vendors' 802.11n AP technology, beamforming can reduce power usage as well as interference, enabling APs to operate at stronger signal strengths with less concern for channel overlap.

The n-standard access points achieve speeds up to six times that of their predecessors and can support 50 to 100 client connections at once.

"Beamforming helps you get higher throughput for greater distances, because it's concentrating the energy toward your device, rather than sending the energy everywhere," explains Jeff Schwartz, HP's global product manager for mobility.

Beamforming enables the access points, which usually contain three transmitters, to time transmissions so packets arrive at their destination at exactly the same time. With prior technology, Schwartz says, the three radios would transmit, and traffic from one would arrive slightly before traffic from another, because they took different paths.

There can be a downside, however. Beamforming relies on a signal exchange between the access point and the receiving device, which can be less effective if a device is moving around and the signal has to be repeatedly reset.

With exponential growth in the numbers of wireless devices on campus, schools are quickly having to adjust to these more complex networking challenges, and are employing sophisticated options for managing their networks. At this point, there's no doubt that 802.11n represents the best wireless technology on the market in terms of bandwidth, speed, security, and network management. At least for now. **CT**

Michelle Fredette *is a writer and editor who splits her time between Portland, OR, and Seattle.*

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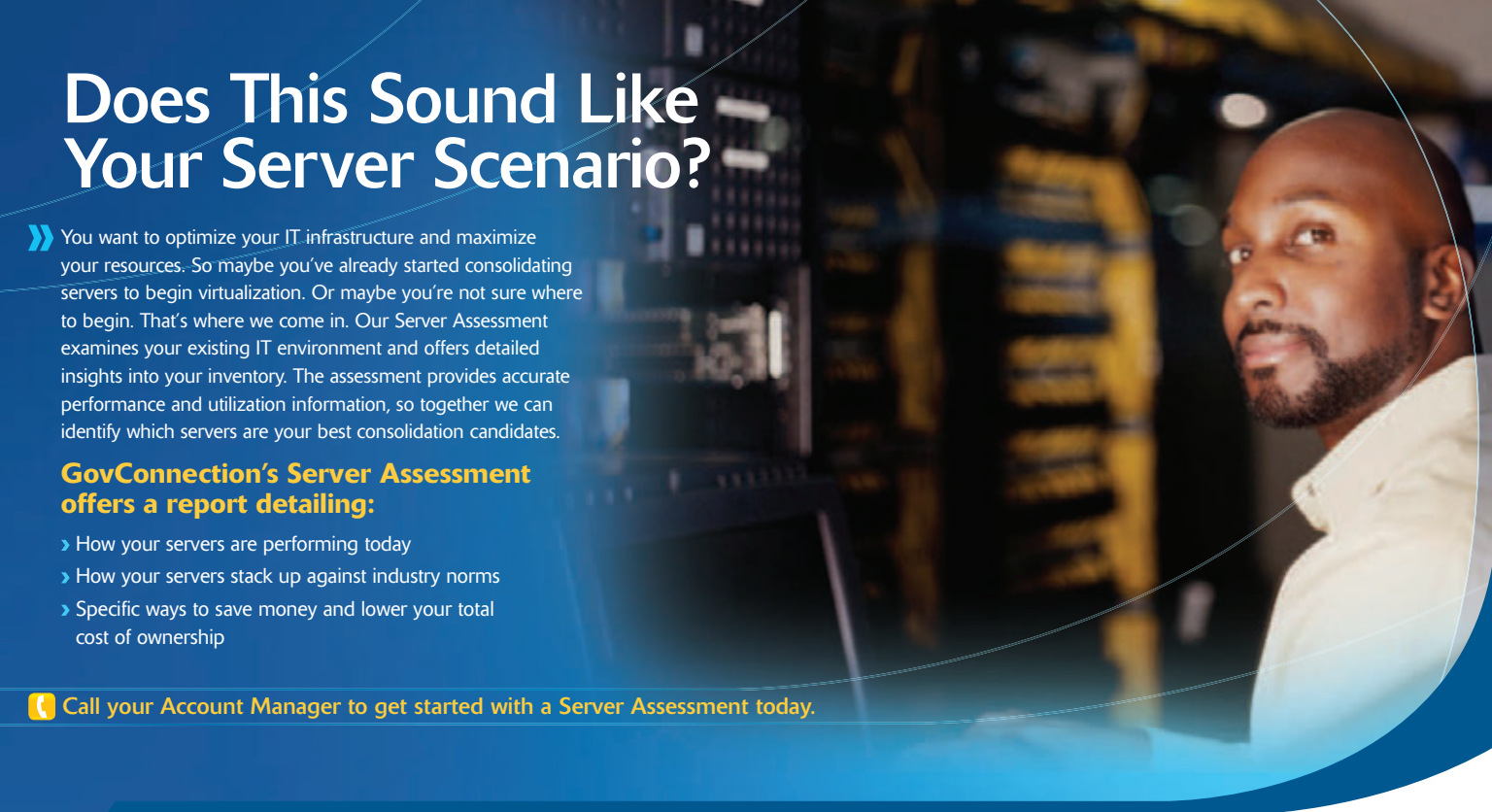

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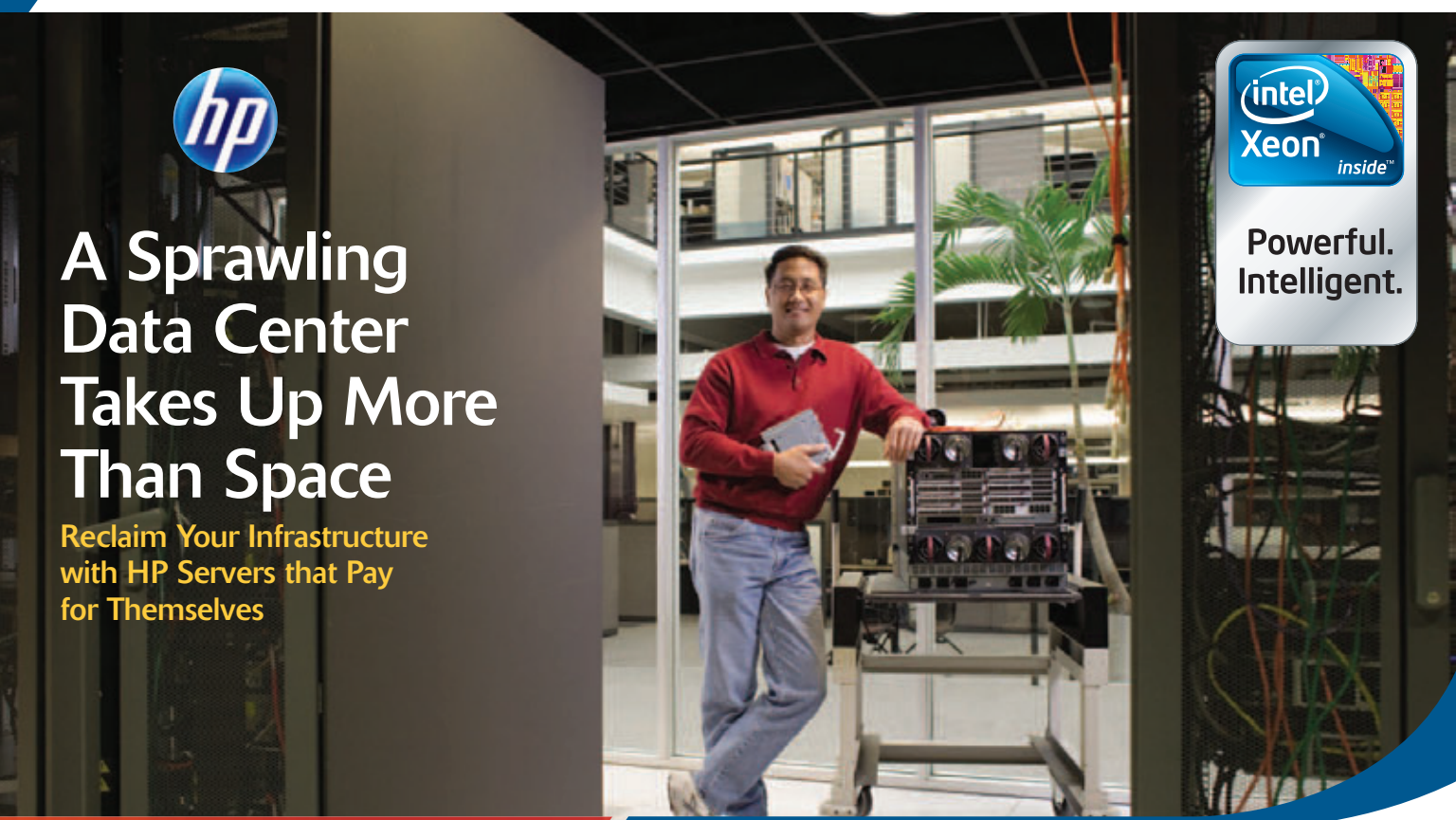

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After leading his team to some rapid successes, our CIO questions the role of the IT group on campus—and develops a road map to the future.

THIS IS THE FINAL INSTALLMENT *in a four-part series that follows the exploits of Gene, the established CIO of a sizable IT organization at a top 100 university. Gene had been working with his team to regain the trust of the campus through Project Rescue, a 30-day turnaround plan focused on demonstrating IT's value. Project Rescue had two primary objectives: Implement a more transparent planning and governance process, and deliver a series of quick wins around some visible projects with high customer value. When we last left Gene, the project was struggling but heading in a good direction.*

Gene was in high spirits as he walked out of his cabinet meeting in early November: His team had successfully completed Project Rescue, and he was congratulated for meeting the needs of the campus.

In just 30 days, his team had been able to add support for mobile devices, improve the wireless network, implement a hosted student-collaboration space, and move forward with desktop video-conferencing—projects that were all well received on campus.

As part of Project Rescue they had also introduced an open and collaborative governance process. Priorities, capacities, and costs were openly discussed, and Gene's colleagues had a growing understanding of—and appreciation for—the role of IT.

But Gene knew better than to rest on his laurels. In order to deliver on these improvements, his team members had delayed a lot of less sexy work. They were behind on some upgrades and patching. They had also called in a lot of favors from key staff, and employees had put in some very long days. The collaboration in planning and governance was working, but would his colleagues understand that less glamorous work also needed to get done?

Sustaining the "New IT" Approach

Gene knew that his team had learned and grown from the Project Rescue experience. As senior managers, they were now more focused on mentoring and developing staff. Their new planning and governance process was building buy-in for future projects across the campus. They were also thinking like owners: looking for opportunities to please customers and taking calculated and appropriate risks. Gene knew that all of this would serve them well, but he wasn't sure it was enough to sustain and deliver the kind of IT that the campus demanded.

To Gene, the IT organization needed to be able to react quickly and embrace new technologies easily. He continued to be haunted by an article written by Nick Wingfield in *The Wall Street Journal* back in 2009. In the

Dan Page

piece, "It's a Free Country…So why can't I pick the technology I use in the office?" Wingfield argued that IT shops just didn't get it—people wanted and deserved great technology freedom. Wingfield questioned why he had a wider range of technology at home than in his office, and wondered what this meant for the future of the corporate IT organization.

Gene recognized that Wingfield's criticism applied equally to his campus, but he also knew he needed to secure institutional data and provide support when his campus customers got into trouble. Above all, he knew that he was on the hook for technology uptime and stability. So how could the new IT organization sustain rapid response, broad choice, high uptime, robust security, and stability in the IT environment?

A Brave New World

Inspired by his managerial blog subscriptions, Gene began to see a path forward. To sustain the "New IT" organization, Gene needed to implement a true paradigm shift: IT should not just be about building and running things. Instead, it should be about integrating solutions and services based on standard interfaces, repeatable processes, and well-defined service catalogs.

In a strange twist, Gene realized, standardization creates an opportunity for experimentation and flexibility by freeing up existing resources. The fewer solutions Gene and his team ran themselves, the more experimentation they could offer—and the time had come when they could rely on others to host and run solutions. Perhaps IT in higher education had finally reached a point where it was time to shed old businesses and business models and embrace a truly integrated world?

In such a world, Gene and his team would continue to steward core and confidential data, user identities, roles, and user entitlements. They would be experts in integration and federation, and would embrace solutions that separated data, logic, and user experience. In this way, they would become experts in "mashing up" user experiences to deliver a custom product based on vanilla solutions and solution providers. On the support side, they would clearly articulate what they could do as experts, and what they simply did not know how to do. The items in the catalog they committed to handling would be delivered through repeatable processes, so that the IT staff could function as trusted advisers.

To make this approach work, Gene's team would need to have a deep understanding of the market, commit to open standards, and look to other providers when it made sense. The team had to take pride in creating research and development capacity by shedding services, and seek to partner with the university on the never-ending stream of new ideas and needs.

Bringing the New World Alive

It was wonderful envisioning what such a world would offer:

- Standards-driven, tiered solutions
- A robust integration practice
- A well-defined service catalog in sync with the needs of the campus
- A commitment to rapid innovation

But could this really happen with his team at his institution?

As Gene packed up for the day, he realized that everything comes back to people and culture. For his vision of the "New IT" to work, he'd need to make and meet a new set of commitments to guide his colleagues, his team, and his campus; build a plan that was agile and that created value during the transition; persuade others to commit and contribute; and, most of all, he would need to lead.

Gene's role would be transformed from chief technology operator and firefighter to that of inspiring evangelist. He would recast the role of the CIO as one where his primary responsibility would be to understand the state of the art, and apply what he learned to the needs of the campus. And he would lead a team that could carry out its mission with excellence, flexibility, and a strong sense of humor. Can this CIO survive? Yes, if he remembers what he has learned. **CT**

Perhaps IT in higher education had finally reached a point where it was time to shed old businesses and business models and embrace a truly integrated world?

Stephen Laster *is CIO of* ***Harvard Business School*** *(MA).*

What will the "New IT" look like on your campus? Join the conversation at campustechnology.com/projectrescue.

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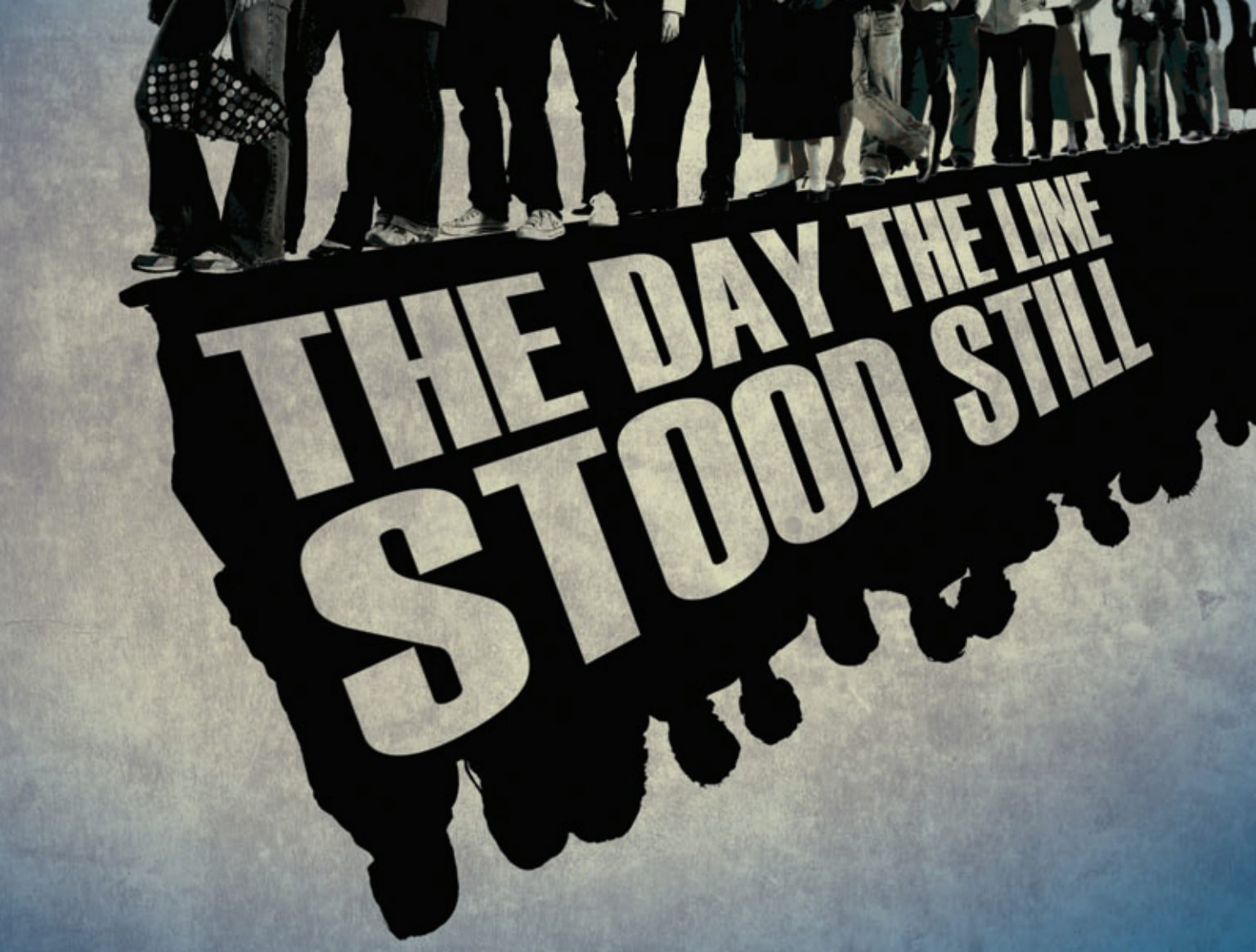
At the Campus Technology 2011 conference in Boston, July 25-28, Stephen Laster will conduct a special 90-minute case study session on a struggling university CIO, helping participants apply lessons learned to their own institutional situations. For more information, go to *campustechnology.com/summer11*.



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A panel of leading educators and vendors discusses the future of the LMS and the innovations needed to make it integral to 21st century learning.

QUO VADIS, LMS?

JOSH BARON
Senior academic technology officer
Marist College (NY)

BRIAN WHITMER
Co-founder
Instructure

THE LMS MARKET IS IN FLUX. According to a 2010 survey conducted by the Campus Computing Project, Blackboard's dominance of the higher education market declined from 71 percent in 2006 to 57 percent in 2010. Open source alternatives Moodle and Sakai have continued to make inroads, as has Desire2Learn—together they now control over 30 percent of the market. The entry of Instructure, whose Canvas LMS recently scooped up the business of the Utah Education Network, provides an additional plot twist. And hanging over it all is the imminent migration of hundreds of legacy Blackboard clients to new systems as their existing platforms are retired.

Often overlooked in the numbers game, though, are more fundamental—even philosophical—questions about the evolving role of the LMS and its ability to meet the needs of higher education today. If the debate of recent years has been between open source and proprietary systems, the focus is gradually shifting to how all of these systems will tackle the thorny issues of informal learning, social networking, assessment, and a mobile learning environment.

To gauge what the future may hold, *CT* asked leading technologists, educators, and vendors for their thoughts on the evolution of the LMS in higher education.

Illustrations by Daniel Hertzberg

IAN SMISSEN
Director, eLearning Strategies
Desire2Learn

BRIAN VOSS
Vice chancellor for IT and CIO
Louisiana State University

"Mobile is going to be a struggle for LMS developers. These systems were designed with the PC in mind." *—Michael Feldstein, Cengage Learning*

CT: What is the most important issue facing LMSs today?

Brian Voss: Getting faculty to make use of it. If people don't use the LMS—or don't understand it—then its value is decreased. I think we must continue to focus less on the LMS itself and more on how to help our faculty make use of it. Then, through their use, shape its development in support of teaching and learning.

Brian Whitmer: LMSs need to embrace openness. We've seen a little bit of this, but there's plenty of work left to do. The traditional LMS is a walled garden. It's data in, nothing out. There are powerful tools all over the internet, and education companies need to learn how to work with these tools instead of trying to rewrite and replace them. This means that LMSs are going to have to become more open and flexible, because the walled-garden approach won't work anymore.

Josh Baron: The LMS must evolve from systems that simply automate teaching, learning, and research collaboration to technologies that also facilitate, and even drive, true innovation—innovation that fundamentally changes how academia works. The ability to post a syllabus (a staple automation function of any enterprise LMS) needs to be complemented with capabilities that embrace the participatory culture of our students and faculty. Ultimately, if the LMS cannot evolve beyond a tool to automate education, it will likely become extinct.

Ian Smissen: The biggest challenge for LMSs today is the tension between being a one-stop shop for e-learning (incorporating the tools and features required by most teachers and learners) and providing the flexibility and extensibility to enable easy access to a range of third-party and custom-built learning tools—all in a scalable, reliable, and secure package.

CT: How will mobile tech influence the LMS?

Michael Feldstein: Mobile is going to be a struggle for LMS developers. These systems were designed with the PC in mind. On a deeper level, we have to ask what teaching and learning tasks make sense on a tablet or a mobile phone. So far, LMS developers have been working to make their discussion boards available on the iPhone and the like. That's important foundational work, but I haven't seen any indication yet that they have ideas about what's unique about m-learning.

Smissen: Mobile technologies offer the opportunity to get closer to the "anytime, anywhere" claim so frequently touted as a benefit of e-learning. An LMS needs to be accessible from mobile devices, be they media players, phones, tablets—or whatever device the future may bring—to really enhance learners' ability to interact when and where they need to.

Mark Frydenberg: LMSs will need to create a user experience that takes advantage of the features of cell phones and tablet devices. Learning exercises may include more simulations and multimedia, and fewer multiple-choice questions. Mobile LMSs will need to give students the ability to work offline. While most students using smartphones have data plans, and students use wireless internet access for their tablets, netbooks, and laptops, there are still many places where internet access is not always available.

Whitmer: Mobile technology is going to give birth to new forms of communication and collaboration that will impact online learning. Since typing on a mobile device is hard for long messages (writing a term paper on an iPhone sounds like an exercise in futility to me), I think we'll start to see video messaging become more common. That's one very basic example, but it is probably just a hint of the kinds of change that will happen in communication as web-enabled mobile devices become ubiquitous. It's exciting to see geo-location and video chat take off in the mobile ecosystem where they didn't so much in a desktop environment. I look forward to seeing how these technologies affect interactions in an education setting.

CT: How will electronic learning content affect the LMS?

Feldstein: This is actually linked to the question about mobile. The development that is finally making e-textbooks feasible is the tablet, where LMSs don't really play well yet. Furthermore, the LMS isn't well designed for sustained content interaction. What we're likely to see is LMSs providing

LMS PANELISTS

Josh Baron
Senior academic technology officer
Marist College (NY)

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Senior program manager, MindTap MindApps
Cengage Learning

Mark Frydenberg
Senior lecturer and instructional software specialist
Bentley University (MA)

Matt Leavy
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Ian Smissen
Director, eLearning Strategies
Desire2Learn

Brian Voss
Vice chancellor for IT and CIO
Louisiana State University

Brian Whitmer
Co-founder, Instructure

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services (e.g., discussion, homework drop box, quizzes, etc.) that can be presented in an e-reader, and e-textbook activities will return grades back to the LMS.

Matt Leavy: The LMS as a technology tool is nearly valueless without high-quality electronic learning content. And electronic learning content is of limited value without the functionality associated with an LMS, including assessment, social interaction, outcomes management, academic structure, measurement, and reporting. The future of the LMS and electronic learning content are entirely intertwined in a model that looks more like the exploding market for assessment-driven learning applications than the PowerPoint posted to a website/LMS (which is still all too common).

The demands of electronic content are already driving much of the development of the most serious LMSs. The impacts range from simple functionality like streaming video to more sophisticated development around building outcomes-management systems, content repositories, assessment and analytics systems, standards-based data systems, and content exchange/rating systems. As the sophistication increases, the authoring process is being developed to eliminate friction, so that faculty, instructional designers, students, and publishers can all make use of sophisticated tools as well as inject teach-ready courses or modules into their environments.

CT: How will the LMS change the nature of instruction and assessment?

Whitmer: I actually don't think the LMS *should* change instruction. I think good teaching is good teaching, and technology shouldn't get in the way of that. Really great educators, whether they're in a classroom or on YouTube, know the best way to share knowledge with their learners. We should be focusing on giving them the right tools to do that, rather than asking them to shift their approach to accommodate flashy new technologies.

Voss: I believe the LMS is already changing the nature of instruction, as teachers begin to see the power of such tools to expand the ways they teach. They can gather more information into a more usable structure, and thus improve access to materials and content. They can make the routine matters of instruction more automated, allowing them to focus on scholarly transfer of knowledge. As for assessment, I'm not sure this has been addressed yet. But I firmly believe that the LMS is not the solution—though it could be a tool. Fundamentally, academia must wrestle with what assessment is and

WHAT LMS DEVELOPERS CAN LEARN FROM FACEBOOK

FOR MANY PEOPLE, Facebook is the embodiment of what web 2.0 tools are all about: the social interaction, the user-generated content, the sheer scope of the connections possible. It's a phenomenon that has swept the country and energized revolutions a world away. *CT* asked the panel to weigh the lessons for the LMS of Facebook's success.

Baron: For decades we have known that there is a social component to education, so it should come as no surprise that connecting people with common teaching, learning, and research interests across our institutions has significant implications. We are also coming to understand that efforts to push academics into this new social dimension of students' lives is similar to attempting to lecture at the bar on Friday night: Just because students spend a lot of time on Facebook socializing doesn't mean that they want their courses to be held there. These realizations should push LMS developers to incorporate new forms of social networking that are designed specifically to enhance academics. These would also provide students and faculty with a protected environment to network with their peers and instructors—much as our physical campuses do today.

Frydenberg: Integrating social-networking features in LMSs could be useful. LMSs may take on additional features of social networks, allowing students to post profiles and connect with their classmates. Teachers and students could post to the class's wall page, share ideas, interesting blog posts, videos, or other online resources. There could be group pages for group projects. Imagine going to your LMS to see which of your classmates are logged in and working on homework, so you can chat with them. This could change the in-person classroom dynamic as it becomes easier for students and teachers to know their classmates. The social LMS may extend beyond the physical classroom, allowing students to connect with peers in similar courses from other universities. On the other hand, it creates the possibility of a popularity contest in the classroom. Do we want really want students to "Like" our lectures?

Whitmer: Facebook is teaching us that communication needs to be at the forefront of web interactions. Facebook is all about conversations, and how interactions between individuals can bring about significant, sometimes surprising results. Meaningful communication, both structured and unstructured, is one of the most powerful tools for effective education. We're seeing examples of the power of communication from Facebook, and also from startups like OpenStudy, Piazzza, and Inigral. Presentation of content is important and useful, but if that's all the LMS has to offer, it will be replaced by Wikipedia or Google Search.

Feldstein: It's not what you know. It's who you know that can help you expand what you know.

Voss: Ease of use and intuitiveness certainly are big draws to Facebook. But there are many factors that I don't believe allow for a direct transfer of "coolness" between the two. Let's also remember that LMSs can be viewed as a social network, but usually as a society tightly defined to a given class. What many people also miss in the rush to Facebook-ize the LMS is that Facebook does have issues—privacy being one. And while good sense should govern our privacy concerns in Facebook, there are laws (FERPA) that dictate privacy with the LMS.

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"The LMS as a technology tool is nearly valueless without high-quality electronic learning content." *—Matt Leavy, Pearson eCollege*

how to do it; then we can look at whether the LMS is a useful tool for that purpose.

Baron: Today's learning, whether on the ground or online, tends to take place in fairly closed learning environments that are isolated from the real world. If the LMS begins to embrace the movement toward openness in education, it will begin to break down this artificial barrier, allowing knowledge and learning experiences to flow more easily across it. A secure but permeable LMS of this nature will facilitate regular interactions between students and experts from industry as well as peers from other cultures and societies. At the same time, it will promote the use of Open Educational Resources (OER) as well as the dissemination of student-generated content for use by those outside the institution. And the integration of the LMS with electronic portfolios, particularly those that support structured assessment, will provide instructors with powerful tools to assess student learning in more authentic ways than traditional multiple-choice tests. We may be entering a new assessment era in which students will graduate not with a single-page transcript but a media-rich portfolio that provides direct evidence of their achievements.

CT: Do LMSs inhibit innovative curricula?

Frydenberg: In Blackboard, the first button on most class pages says "Announcements"—and only the instructor can add them. If my students want to share relevant events, blog posts, websites, or videos with their classmates, the LMS doesn't offer them a way to announce this information to the class. Many LMSs place the teacher in the role of creating content and the student in the role of consuming it. This is contrary to a web 2.0 world that relies on user-generated content.

Some of today's LMSs integrate many different technology tools: Blogs, wikis, and podcasting tools are often standard collaboration features of LMSs. Teachers must determine which to use as applications within the LMS, and which are better left to "real world" web applications. Should students learn to use a blogging or wiki application that is unique to a particular LMS, or should they learn WordPress or

"Many current LMSs place the teacher in the role of creating content and the student in the role of consuming it."

—Mark Frydenberg, Bentley University

Blogger or Google Sites to develop skills in these technologies that they might use beyond their college courses?

CT: Will the use of analytics in LMSs change the educational experience?

Leavy: Analytics have the power to drive the evolution of pedagogy and the student experience. There are two principal axes along which analytics will propel learning. The first axis is toward personalization. The real-time evaluation of learning and activity data allows our systems to adapt to provide a learning experience that is individually appropriate to a given student. The current state of personalization tends to be based on tracking the development of online work and identifying interventions that have worked in the past for students with common data patterns. As we advance into whole-program and learner-lifecycle systems, sophisticated learner profiles are being developed from which more precise and efficient learning paths will emerge.

The second axis is toward content and pedagogy improvement. Not all learning experiences are created equal and we can evaluate the difference through analytics. By tracking carefully developed learning objects in repositories and using analytics to measure the impact of exposing learners to those experiences, we will be able to demonstrate quality at a very granular level.

There are a couple of keys to advancing the effective use of analytics. The first is developing some commonality of teaching practice—i.e., if all variables are distinct between sections and courses, then the data doesn't mean much. The second is that the larger the data set, the more powerful the data. In other words, data landlocked in a particular course or campus are less powerful than data held in the cloud. Currently, the most effective analytics are gathered from common learning applications or those programs based on the master-course model that serve millions of students.

Smissen: Good analytics tools provide both a rearview mirror and a predictive look into the future to enable LMS users to make decisions about themselves, their staff, or their systems. Students will be able to monitor their own progress against discipline-based, generic, and self-generated learning objectives and compare their performance against class, institutional, state, or national averages. Instructors will be able to develop predictive models of indicators for success or for students at risk of failing—and manage their content, assessment, and interaction with students accordingly. Academic administrators will be able to analyze courses and/or instructors that consistently do well or poorly in student satisfaction and evaluation surveys, allowing professional-development and instructional-design efforts to be directed where they will be most effective. Institutional IT directors and managers will be able to see which tools are being used by whom, when, and where, in order to make decisions about infrastructure maintenance and improvements.

ONLINE EXCLUSIVE: Gary Brown, an assessment consultant at **Washington State University**, discusses the challenges facing the LMS in an educational environment that increasingly stresses learning that is not confined to a classroom.

campustechnology.com/0711_brown

CT: What will LMSs look like in 10 years?

Frydenberg: LMSs will adapt to a student's learning style, actually managing learning more than learning materials. They will know in what areas a student needs help, provide additional relevant evaluation exercises, and suggest the student see his instructors in person for help. Perhaps students will be able to speak their responses, and the LMS will be able to evaluate what they say.

Smissen: It is difficult to predict what educational technologies will look like in two years, let alone 10, but I expect the most significant changes will come from connectability. Mobile and WiFi technologies will merge, and bandwidth and connection speed will continue to improve exponentially. With these will come opportunities for multistream communication with multimedia, audio, and video on a single device. Resources will be managed in cloud-based repositories that will allow authenticated users to access approved content from anywhere in the world. Interoperability standards will ensure that technology providers can develop tools that will plug and play with other tools. Authentication and accreditation systems will enable students to enroll across multiple institutions, selecting courses to build a program to meet their individual needs while still meeting employability and professional registration requirements. In this world of the future, the LMS will provide a secure, scalable, and extensible backbone upon which institutions can construct virtual teaching and learning environments from a suite of tools and global resources to meet their needs. CT

CT2011 SPOTLIGHT

The LMS debate will continue at the Campus Technology 2011 conference in Boston, July 25-28: Don't miss our special one-hour discussion featuring panelists from this article. For more information, go to *campustechnology.com/summer11*.

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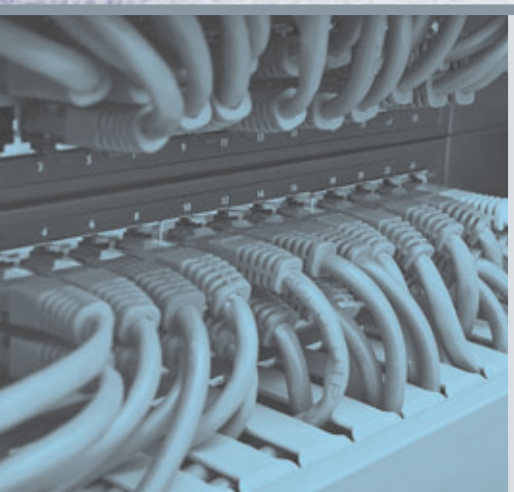

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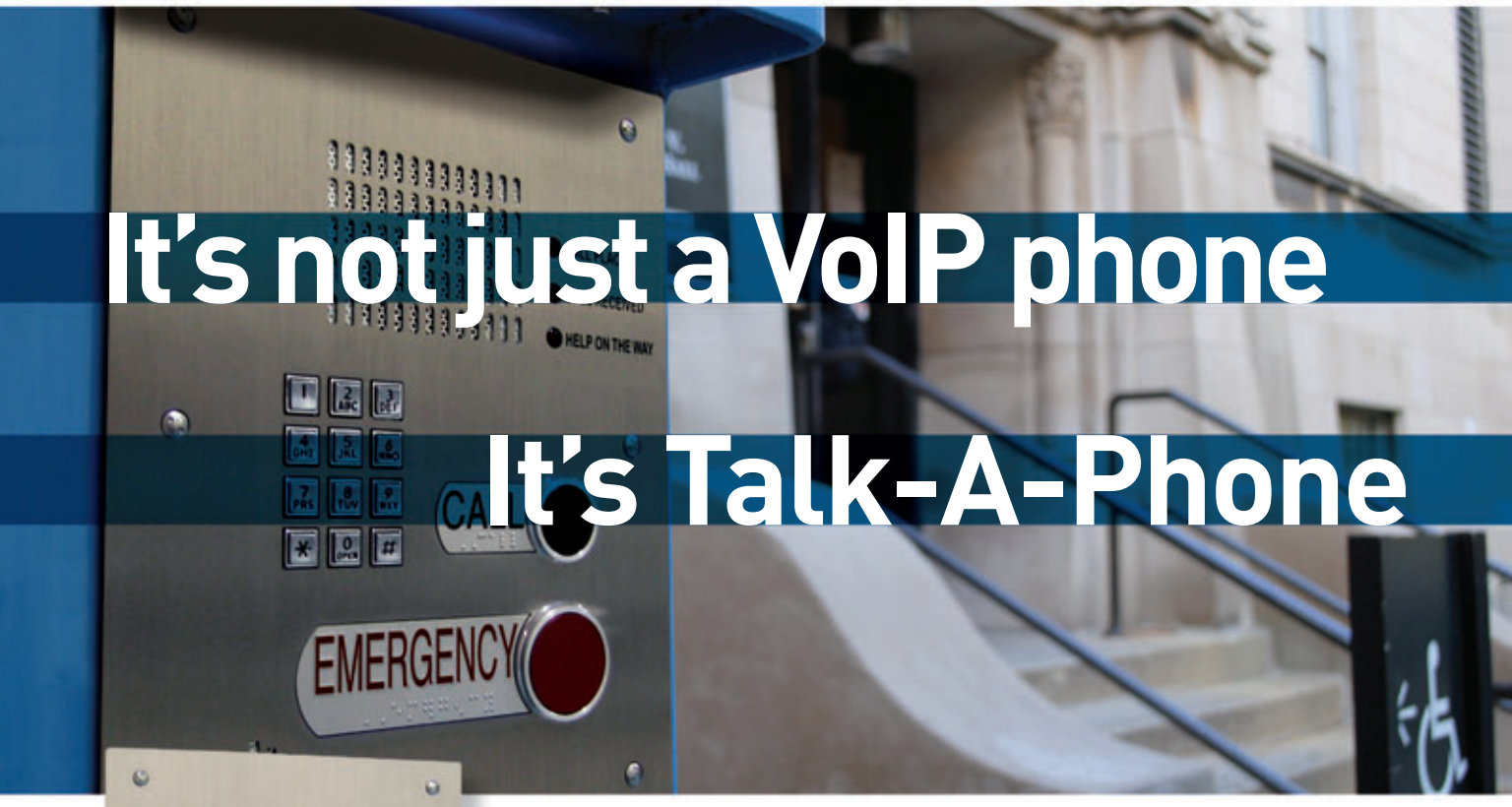

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COMMENTARY

HIGHER EDUCATION, BETTER SECURITY

By Ralph C. Jensen

HOW CONFIDENT ARE YOU THAT THE SECURITY OFFERED AT YOUR CHILD'S COLLEGE OR UNIVERSITY IS ADEQUATE TO PROTECT HIM OR HER? SURELY, THAT'S ONE OF THE TALKING POINTS YOU CONSIDERED WHEN CHOOSING HIGHER EDUCATION.

My sons, all grown and graduated, didn't talk much about this issue when deciding which university to attend. It wasn't an issue that entered my mind, either.

Today's parents, however, must consider campus security as a vital part of the learning experience. Today, parents have options and assistance from the university. Campus police take an active role in guiding and informing parents on what their children can expect.

"Parents mainly ask if the campus is safe, and what the bigger issues we face might be," said Troy Lane, chief of police at the University of Wyoming, Laramie. "During most of the month of June, we hold orientations for new students and parents of new students. The police department is represented in both orientations. We avoid many questions because we tell them up front about who we are, what we do and what safety measures are in place."

One question that comes up more and more often concerns residence halls, where students may be the most vulnerable and where updates are underway at Miami University in Oxford, Ohio.

"The university will be installing new proximity card locks on every residence hall room," said John M. McCandless, chief of police at Miami University. "This takes us away from standard keys and will be beneficial. With the old locks, students would regularly leave their doors unlocked, and we would have many thefts as a result.

"The amount of crime alerts we issue for burglaries should also drop. We also have a swipe card system on the entrances to the residence halls that helps to enhance security."

While policing a campus may seem different from monitoring the surrounding community, both Lane and McCandless say that the services the campus law enforcement provide are similar to municipal services; policing a campus does include monitoring Saturday afternoon football games, but otherwise the job is much like community policing, they say.

"The university hosts many events annually, each bringing a different set of challenges," McCandless said. "We coordinate a lot of moving parts, and we could not do it without our area law enforcement partners."

The University of Wyoming handles such special events in a similar manner, but it also depends upon the event. Law enforcement can be available on an on-call basis or they are heavily involved in the preparations. Lane said they have run the gamut of events on the university's campus, including small dances, political debates and even presidential visits.

Much like their counterparts in municipal and county law enforcement, campus police crave technology. McCandless noted that 28 years ago an electric typewriter was high-tech. Times have changed. Today, law enforcement officers rely on technology to work in a smarter way. Everything from digital fingerprinting to license-plate readers has changed the way police complete their mission. Other technology in

use at the University of Wyoming includes the deployment of text tip programs, social media, in-car cameras and video surveillance systems.

This technology isn't cheap.

"These systems do require maintenance, backup and updates," Lane said. "We find ourselves counting on in-house, self-trained experts or relying on vendors for servicing."

Higher education also finds itself adhering to federal guidelines to inform students, staff and faculty if there is an emergency on the campus. Mass notification systems vary, and law enforcement's use of particular systems also varies. At the University of Wyoming, campus police employ a text alert program, mass e-mail notification and a public address system. At Miami University, law enforcement has partnered with E2Campus for text messaging, but the department also uses VoIP phones and message boards.

Police also rely on additional campus resources, such as faculty and staff.

"One of the things that hasn't changed is the fact that we need our community to be a partner (eyes and ears), and we constantly ask them to call if they see anything suspicious," McCandless said. "Other departments on campus are great partners—grounds and physical facilities are an example of folks on campus that we count on."

The University of Wyoming is always looking to involve the community, including text tips, Silent Witness e-mails, crisis intervention teams and the ongoing reminder that public safety is everyone's responsibility, including students' and parents'.

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FEATURE

NETWORK THE CAMPUS

Networking simplifies installation; technology solves application challenges

By Bill Taylor

IP-BASED VIDEO SYSTEMS SEEM TAILOR-MADE FOR THE EDUCATION AND CAMPUS ENVIRONMENT. USING IP AND CONNECTING ACROSS INFORMATION NETWORKS, THESE SYSTEMS CAN REACH MAXIMUM EFFECTIVENESS IN THE ENVIRONMENT OF MODERN NETWORKED CAMPUSES.

Network connectivity ensures surveillance video can be made available from anywhere on the campus without the added expense of running coaxial cable to each camera. Existing networks are typically campuswide, meaning that the ability to provide critical video for any surveillance need is as near as the closest network node.

Network connectivity is simplifying campuswide video coverage, at a time when the need for surveillance and security on college and university campuses is greater than ever. The 2007 tragedy at Virginia Tech, in which 32 people were killed and many others wounded, remains a stark reminder of the need for campus security. Assaults and rape also are ongoing security concerns at college dormitories, and a multitude of less-serious incidents—including vandalism, theft and fights among students—further reflects an accelerating need for security and surveillance systems on campuses.

INTEGRATION OPPORTUNITY

IP networking drives all kinds of systems for various uses on campuses and presents an opportunity to expand the effects of integrating security and other systems. Today, college classrooms often are integrated with networked audiovisual systems that also tie into the university's IT backbone. The connectivity and functionality of these systems also enable them to play a role in security and emergency response, in addition to their everyday functions.

An integrated audiovisual system is part of the new technology-driven classroom environment. Intelligent solutions can integrate

video, computers, projectors, whiteboards and handheld tablets, along with a wireless audio system. Beyond the educational benefits of such systems, they can be helpful in case of an emergency situation or an outbreak of violence.

Cutting-edge technology is helping meet challenges brought on by system components spread across large areas and is enabling IP-based surveillance systems to become an even more integral part of campus life.

For example, a wireless classroom audio system could double as an element of an emergency response system. Infrared technology-based audio systems help teachers and students communicate better and can include the use of a wireless pendant microphone worn by the teacher that sends a signal to infrared receivers connected to speakers to amplify the sound of the teacher's voice. In case of an emergency, the audio system works in tandem with an integrated document camera to allow a teacher to quietly initiate an immediate first response.

The document camera is primarily used to capture images of books, maps or other teaching materials and project them on a screen in the classroom. A network document camera, similar to the video cameras used for surveillance, provides exceptional images in virtually any lighting condition. In case of an incident or an emergency, the teacher can press a panic button located on the pendant microphone. This sends a signal to automatically reposition the document camera to focus not on a book or map but on the classroom as a whole. In effect, the document camera instantly becomes a video surveillance camera, and video is incorporated into the school's networked surveillance system to provide visual information about an unfolding event. Pressing the panic button also sends an immediate alarm to authorities, enabling immediate response and action to secure the campus, if needed.

APPLICATION CHALLENGES

The campus surveillance environment does present a number of application challenges. Among them is the question of how to maintain and support surveillance systems, given that system components are spread across a large area. Cutting-edge technology is helping meet all these challenges and is enabling IP-based surveillance systems to become an even more integral part of campus life.

Outdoor applications. Cameras must be able to withstand environmental elements and continue to operate. Outdoor cameras should meet international IP66 standards for dust and moisture resistance in order to be installed under building eaves or in other environments subject to wind and rain. A dehumidification device and/or a heater can be used to offset extreme operating conditions.

Threat of vandalism. Cameras must be able to stand up to abuse, vandalism and other rough treatment. Engineering and design features, and use of special materials, enable cameras to continue operating even after shocks and impacts that would disable a conventional camera.

Camera coverage for large areas. Using fewer cameras to cover a larger area can help to keep system costs low, and megapixel technology now makes this possible. High-resolution images enable operators to zoom in on an image to see greater detail, such as a vehicle license plate, even on recorded video. Operators can direct PTZ cameras to cover larger areas, and some PTZ cameras automatically pan and tilt to follow a moving subject, keeping it in the center of the image. PTZ cameras also can be programmed to present a sequence of pre-programmed views and/or to move to a specific position in response to an alarm.

Image quality. Identifying faces is important in the campus surveillance environment, so image quality is paramount. Resolution is one factor in quality, and intelligence inside the camera works together with megapixel sensors to further improve images. For example, image processing technology can transform dark areas into natural, high-contrast images such as those seen by the human eye. Adaptive digital noise reduction takes care of the "noise" in a camera image, a process that is especially useful for clarifying images of moving objects.

Lighting. Cameras can help to offset the challenge presented by variable lighting in campus environments. Cameras must be able to capture important details even when an image is backlit. Image processing manages the dynamic range of a video image, which is the span of gradations from the lightest to the darkest areas. Intelligence inside the camera uses natural-contrast image correction to optimize contrast of each pixel and to faithfully reproduce objects in any area and position. The result is better images despite extreme lighting conditions. Day/night cameras also enable 24/7 coverage across the campus.

System costs and preserving previous investment. Campuses that have existing analog security systems often want to preserve that investment as they transition to IP video. Video encoders provide the critical technology link between a legacy analog system and a new IP system. Strategic use of encoders can provide a seamless migration path to connect older systems with newer technologies, while preserving the value of existing resources and incorporating them into a modern networked system. Advanced encoders may include intelligent features such as face detection, H.264 high-profile format transmission and video motion detection. There also are numerous other solutions on the market that enable use of existing infrastructure.

KEEPING SYSTEMS HUMMING

In the campus environment, system components can be located far from the central control room. Although components may be out of sight, system operators should create a plan to keep all system components working dependably and efficiently. Ongoing system oversight should include verifying that cameras are functioning properly and that all features are functioning at their full capability.

Regular troubleshooting and updates to the network along with your cameras and recorders will ensure you get top performance and the best possible ROI from your entire system.

TAKE A WIDER VIEW

A broader mindset enables campuses to leverage multiple technologies to improve security and to use security systems to enhance non-security functions. Taking a wider view can maximize the benefits of modern technology and make it easier to cost-justify technology investments.

Bill Taylor *is the president of Panasonic System Networks Company of America. He can be reached at* Bill.Taylor@us.panasonic.com.

FEATURE

HOLD THE PHONE

Emergency communications: Is it time for VoIP to shine?

By Sam Shanes

COLLEGES ARE REMOVING ANALOG PHONES FROM DORMITORIES FOR A VARIETY OF REASONS. STUDENTS DON'T USE THEM BECAUSE THEY HAVE CELL PHONES. IN AN EMERGENCY, EQUIPMENT FAILURE DUE TO A WALL-CONNECTED PHONE'S AGE CAN QUICKLY TURN INTO A LIABILITY. THE COST OF MAINTAINING THE NECESSARY LEGACY INFRASTRUCTURE MIGHT FINALLY OUTWEIGH THE UPGRADE OPTION, PROMPTING THE CHANGE. OR IT COULD ALSO BE A DESIRE TO STANDARDIZE ON IP.

Whichever the case, the problem is anything but trivial. Phasing out legacy emergency communications capabilities without a migration plan will cut the vital link between those seeking help and security staff. The importance of such a communications channel cannot be overstated from both legal and public relations perspectives.

So what are the options? Phones can be installed in dormitory hallways for emergency use. VoIP is quickly becoming a de-facto standard for communications on IP networks, so naturally office VoIP telephony is viewed as an alternative for emergency communications. However, business-grade VoIP phones do not possess the necessary durability, are not designed with emergency communications in mind and are not ADA compliant.

The proper way is to embrace and benefit from IP while keeping reliable emergency communications a priority. Upgrading to VoIP emergency communications is an attractive and inexpensive option because most campuses are already equipped with necessary IP infrastructure.

DEPAUL UNIVERSITY UPGRADE

As facilities are moving to IP for buildingwide use, it becomes economical to install VoIP emergency phones in hallways, stairwells and elevators along with IP-based video surveillance and access control systems. VoIP emergency phones are designed for emergency situations, and so their primary function is to establish reliable communications in a time of crisis. Emergency phones are ADA compliant, and their ruggedness gives passersby a sense of security.

For DePaul University, upgrading to VoIP emergency phones was not a hard decision to make. Founded in 1898, DePaul University is the largest private institution in Chicago, with more than 23,000 students.

"Fortunately, I'm set in an institution that is big on safety," said Bob Wachowski, director of public safety for DePaul University. "There is a capital funding program in place, and DePaul has come a long way. The university administration is very supportive of my needs, and that is unique."

Wachowski recently upgraded the college's analog emergency phones to new VoIP emergency phones manufactured by Talk-A-Phone. The new phones are SIP-compatible and work on the college's IP PBX system.

As an added benefit, the new emergency phones can be paged at high volume via mass notification software, which allows the public safety staff to issue targeted alerts to segments of a campus in groups or individually. The software automatically tests and verifies connectivity of voice-over-IP phones and sends e-mail alerts when it detects failure.

Wachowski also recently installed Talk-A-Phone's new generation of all-LED blue lights on 90 existing emergency phone towers.

"You can see them from about everywhere you are on campus," Wachowski said. "They help our students feel safe and they are a deterrent to crime."

The new units have ultra-bright, all-LED blue lights, and they feature 209 lumens peak rating and prismatic pattern to increase visibility at greater distances. The units' All-LED construction significantly increases their life span.

"Our biggest crime is theft of unattended items," Wachowski said. "But some of our issues occur late at night, so the phone towers assist the students. I recently met with the student government association to help us promote use of them. Our campus tour guides already promote them. We like to make every student aware of the emergency call towers."

EMERGENCY PHONES IN CLASSROOMS

The situation in classrooms is slightly different, yet it resonates with the issue of migration to alternative technology. Traditionally, classrooms are equipped with announcement speakers only, leaving emergency communications out of the picture. But what if the students or staff in a classroom need to reach out to university security during an emergency?

With growing concerns for student safety on campuses and widespread adoption of mass notification technology over existing IP infrastructure, it is reasonable to offer two-way communication capabilities inside classrooms.

A VoIP emergency phone serves a dual role. On one hand, it's a reliable and robust emergency communications device with unparalleled flexibility to work on SIP-compliant VoIP networks. On the other hand, it's a durable and loud paging speaker, capable of outputting sound louder than 100 dB. Voice-over-IP emergency phones can also be integrated with mass notification platforms to form a powerful, multi-layer mass notification solution.

IP empowers communications. And now that emergency phones are available with VoIP, security professionals can take full advantage of their IP infrastructure.

Sam Shanes *is the chairman of Talk-a-Phone. He can be reached at* sshanes@talkaphone.com.

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FEATURE

PRIVATE DEPLOYMENT

Icelandic university warms up to prox card technology

By Harm Radstaak

REYKJAVIK UNIVERSITY IS A VIBRANT INTERNATIONAL UNIVERSITY LOCATED IN THE HEART OF REYKJAVIK, THE CAPITAL CITY OF ICELAND. THE UNIVERSITY IS ICELAND'S LARGEST PRIVATE UNIVERSITY AND FOCUSES ON RESEARCH, EXCELLENCE IN TEACHING, ENTREPRENEURSHIP, TECHNOLOGY DEVELOPMENT AND COOPERATION WITH THE ACTIVE BUSINESS COMMUNITY.

RU has been happily using HID proximity technology to secure its buildings for many years. About three years ago, though, the university decided to build a larger, more modern facility to accommodate all of the university's five degree courses in the future.

Designing this new facility for RU was not an overnight task. Many hours of planning and research were put in to ensure the best possible facility. The university's technical manager, Ellert Igni Harðarson, spent almost a year researching the applications and products that could be suitable for the new building, and in the course of his research, he also met with HID Global at its EMEA offices in Haverhill, United Kingdom.

To make the new building a success, RU worked closely with Securitas Iceland, which, with the university's building consultant Eirikur K. Torbjornsson, designed a solution to fit the university's vision.

This vision was to have an almost "key-free" building, not only to increase the convenience and security for students and staff but also to reduce costs and increase efficiency. Whatever solution the university would choose today needed also to be able to grow and fulfill future requirements of a high-tech system and building.

"Our vision is to have a true multi-application smart card that in the future can be enabled for cashless vending, canteen, on-demand printing, photo ID, library, use of lockers and maybe more," Ellert said. "We also are working with the wider community to extend the use of student cards for public services, such as for buses, the museum and swimming pools. We really would like to see the use of smart cards adopted even beyond the boundaries of the university and make the advantages of multi-application ID cards available to everyone."

"By planning for a true multi-application future from the start, with this project we were able to ensure a quick return on investment for the university," Eirikur said.

Content with the existing solution and after much research, the university decided to transition to HID iCLASSR, using both multi-technology cards and readers. Officials considered iCLASS a cost-effective and convenient choice as it made the migration to smart cards simple.

"From the outset, it was important for us that students who were issued access cards for the old building would be able to use their cards and gain access also in the new building," Ellert said.

The university charges students a nominal fee for the cards, which according to Ellert has helped to reduce card loss to almost zero because students begin to value their cards instantly.

The system now installed at the university extends the boundaries of access control and has seamlessly integrated lighting, electronics and room-allocation control.

"We are trying not only to provide a secure and high-tech facility for our students and staff, but to also be green and conscious of our environment around us," Ellert said. "Such integrated solutions help us to learn about how rooms and areas within the university are used, allowing us to become ever more intelligent and efficient."

Today, the multi-technology smart cards provide about 4,000 students access to all the university buildings. By uploading to the university's intranet, a student can receive his or her card on the first day of school with all his or her details and a photo already printed on it.

"We use a Fargo HDP5000, which is handled by our receptionists, who are able to deliver cards to new students even during the busy periods at the beginning of term," Ellert said.

The cards are used throughout the old and the new buildings to gain access to classrooms, lab rooms and study areas 365 days a year, 24 hours a day. The new campus is not yet complete, and use of the current facility was extended last August.

"Iceland itself is a very-forward thinking country, and most of our local and international students have been in touch with smart cards and access control cards before, therefore the adoption of smart cards was very quick, and we have received very good feedback from our students and staff so far," Eirikur said.

Ellert and Eirikur concluded by saying that they are excited about the possible future uses and applications for their smart cards, hoping that one day soon the university cards can be used on the local bus, the public library and even at the theater.

"RU has the determination to think big, to always improve the university's ability and to decisively carry out our plans," Ellert said.

Harm Radstaak (hradstaak@hidglobal.com) *is the managing director of identity and access management, EMEA with HID Global.*

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FEATURE

AN A+ FOR VMS

Remote monitoring functions meet the grade; intuitive design smoothes out learning curve

By Rob Shaw

IT'S ONE OF THE FIRST LESSONS LEARNED IN SCHOOL: IF AT FIRST YOU DON'T SUCCEED, TRY, TRY AGAIN. AFTER UNSUCCESSFULLY TRYING A HANDFUL OF VIDEO SURVEILLANCE SOFTWARE PROVIDERS AND EVEN MORE VIDEO CAMERA MANUFACTURERS, HOBBS, N.M., MUNICIPAL SCHOOL DISTRICT SOLVED THE EQUATION FOR ITS VIDEO MANAGEMENT SYSTEM NEEDS.

Located just a few miles west of the Texas border in eastern New Mexico, Hobbs is a community of 32,000 that enjoys mild winters and warm summers. With more than 8,000 students, the Hobbs Municipal School District continues to grow, which, as any educator knows, calls for an increasing need for effective and reliable technology throughout the schools. And today, video surveillance is considered high on that list

Unhappy with previous video surveillance software providers and cameras, Hobbs systems engineer Andrew Toglia called on New Mexico systems integrator Klein Security & Safety to find a permanent solution that met its high standards in addition to resolving a long, unmet desire to have recorded audio in addition to video.

"Hobbs had serious problems with their previous video surveillance program. It became such an issue for them that they abandoned what they had in place in search for a better product," said Mark Kleinsteuber, vice president of Klein Security & Safety Systems.

"Among the many problems they had with their previous software providers was unreliability," Kleinsteuber said. "They didn't perform as promised. They persistently had problems with upgrades, which would put more bugs in their system. Their biggest concern, however, came to be dealing with the horrendous and absent tech support regarding fixing these constant issues."

The school district also had problems with image quality and camera performance in its previous system.

"Their picture quality was terrible and was even worse in low-light conditions at night or when building lights were off," Toglia said. "These were very recognizable names in camera manufacturers, and we had problems like PTZ cameras coming off of their tracks constantly."

Klein Security & Safety recommended Hobbs download a free Video Insight software trial because the integrator felt it would be the right product to provide what the school district needed.

"We recommend Video Insight software for all of our projects, among them schools, businesses and petrochemical plants," Kleinsteuber said. "It's a reliable, feature-rich product that's intuitive and easy to use. We rarely experience problems, but if there's an issue, Video Insight's U.S.-based customer service is responsive and top-notch."

Kleinsteuber recommended Axis network cameras for use with Video Insight because the duo "works together seamlessly."

In fact, after becoming acquainted with Axis IP cameras, Toglia says Hobbs has chosen to move forward exclusively with Axis products.

"Axis has the best picture quality, especially in those important low-light conditions. Axis also has better interfaces on the cameras themselves for saving and restoring settings, changing iris or focus settings and other options," he said.

Perhaps most importantly, Toglia said, "Of the more than 400 Axis cameras we've had in place for three-plus years, we have not had one fail yet."

One of the key features Hobbs officials sought in a video software provider was the ability to monitor and record sound, a feature its previous software provider did not have.

"As a school district, oftentimes pairing sound with video provides a complete picture of an incident, enabling administrators to better pinpoint parties involved and the evolution of an incident more precisely," Toglia said.

Another issue Video Insight solved for Hobbs was storage. The previous software Hobbs used was based on time and not on size.

"With our previous providers, you'd always just have two weeks of storage no matter what," Toglia said. "But with Video Insight, we base it on size so we can configure it to store the data for as long as we want, which is particularly helpful being a school district, where we often have long periods of time without regular activity in buildings due to summer or holiday breaks."

In addition to recorded sound and storage, another advantage was that the software allowed camera access from outside the network.

The Hobbs video surveillance system operates with one centralized server located at technology headquarters and an archival server at each building.

"You can view all of your cameras from anywhere," Toglia said. "We were able to give school district police officers login credentials so when they respond to a school they can view crystal-clear images from the Axis cameras from a laptop or smartphone before going into the building. They couldn't do that with our previous software."

Toglia says he also likes being able to control PTZ within the software and the ability to play recorded video back and forward at eight times the speed with a very "smooth image."

Ease-of-use was the final benefit that tipped the district's decision on the solution.

"We haven't even had a formal training, nor have we had requests for one. We loaded the software on their desktops and gave them a five-minute tutorial and they have been up and running ever since."

Toglia and Kleinsteuber also agree that technical support is critical, especially in a school environment in which many different non-security personnel might be accessing the video. On the rare occasion the district needed support, officials said Video Insight's one-hour-call-back-guarantee tech support department has "been very impressive to Hobbs and to my company," Kleinsteuber said.

Hobbs has made an aggressive effort to ensure comprehensive video surveillance coverage of its 16 schools and four buildings, providing more than 400 Axis cameras throughout the district. The next phase of construction will include an additional 70 Axis cameras.

"Overall, we couldn't be more pleased with how well Video Insight software and Axis cameras work together and the top-notch security solution they have provided Hobbs Municipal Schools," Toglia said.

***Rob Shaw** is CEO and co-founder of Video Insight. He can be reached at* rshaw@video-insight.com.

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FEATURE

EMERGENCY NOTIFICATION

Protecting the learning environment

By Timothy Means

INSIDE CLASSROOMS, 10 TO 100 OR MORE PEOPLE ARE ISOLATED FROM THE OUTSIDE WORLD IN A ROOM WITH DOORS THAT DO NOT LOCK TO KEEP DANGER OUT. IN THE EYES OF CAMPUS SAFETY EXPERTS, THIS IS THE PERFECT SETTING FOR A POTENTIALLY BAD SITUATION.

The amount of time college students spend inside classrooms—from two to six hours daily—causes a sizeable gap in mass notification system coverage for most colleges and universities. To penetrate the protected learning environment, schools must employ precision notification systems.

On college campuses, professors have taken a hard line against the use of cell phones and laptops in class because of the disruptions caused by calling, texting and surfing the Internet. Most classrooms have signs posted prohibiting use of cell phones, and many professors include similar language in the class syllabus. A National Education Association survey shows that 85 percent of professors on college campuses support banning cell phones in their classrooms.

So it's clear that the classroom is one of education's sacred spaces. But what happens when events outside demand that emergency information penetrate the protective cocoon of the classroom?

MASS NOTIFICATION LAYERS FAIL TO PENETRATE

Unfortunately, the predominant methods of mass notification on university campuses—cell phone/text messaging, e-mails and Web announcements—are minimally effective in the classroom.

On average, only 40 to 50 percent of students opt into a school's calling program, which equates to 10 to 12 students in a classroom of 25. If, say, 75 percent have their phones turned off in class, then only two or three students would be able to receive a message pushed through the school's cell phone-based emergency notification system (ENS). Given that calling systems cannot target specific classrooms, it may be 30 minutes or more before a message appears on one of those phones. Even fewer students bring laptops to class, but the same logic applies.

"I think that someone would have to personally come to the classroom if we had an emergency scenario," said Emily Drill, an adjunct lecturer at the University of Pittsburgh and Allegheny College. She added that while students are familiar with fire alarm drills, their experience with other emergency evacuation events is minimal.

IP ENDPOINTS GET THE JOB DONE

"Emergency notifications in the classroom setting must be made by more effective tools than e-mail, text messages or Web pages. Two-way communication systems, radio receivers, digital signage or VoIP phones provide the most rapid means for emergency notification," said Dennis Sullivan, assistant EHS director and emergency manager at Louisville University

The most effective way to alert a classroom is to use a precision notification system that connects to dedicated, networked alerting devices inside the room. These may include proprietary alerting devices made by manufacturers such as Metis Secure Solutions or VoIP phones similar to those made by Cisco Corporation. A precision notification system targets alerting devices by location and uses network infrastructure independent of consumer communications networks. These systems can send messages to one or all classrooms without alerting the entire campus population and are a faster, more-accurate way to deliver a warning.

In all its classrooms, the University of Louisville has installed VoIP phones set to dial the University Police if the receiver is picked up. They also communicate emergency messages in the classrooms using a text screen, audio and a flashing light.

"During a recent tornado warning, every classroom was provided timely warning that was faster than text messages, e-mails or our Web page," Sullivan said. "This system is not for everyone and would be extremely costly unless you already have converted the university from analog phones to digital phones."

One advantage of these devices is that they display text and provide audio data to the whole class—including the professor, who is the appropriate authority to direct the class during an emergency. These systems are activated during an emergency only, removing impetus for students to have their cell phones or laptops active during class.

It is important that text and voice information about the need for sheltering in place be conveyed immediately. One EHS director confided that she worries about a scenario where a dangerous situation outside occurs five minutes before classes are dismissed, resulting in thousands of students potentially walking headlong into a crisis. Many fire alarms and outdoor sirens produce a warning tone only and cannot provide detailed instructions. In the event of a chemical spill, severe weather, violent crime or similar situation, leaving the classroom to see what is happening may be dangerous.

Newer fire alarm systems support live voice using a microphone at the panel, but a person has to be in the building and have keys to the fire panel to operate it. All of these steps waste precious time.

According to a survey, fewer than 20 percent of higher education institutions have deployed in-building ENS. Therefore, there are many students who won't get emergency notifications during class. Administrators who make the effort to deploy precision notification systems will fill a gap left by the other commonly deployed ENS layers. It is the best way to inform and protect more students while respecting the integrity of the classroom and the learning experience.

Timothy Means *is the director of product management and a co-founder of Metis Secure Solutions. He can be reached at* tmeans@metissecure.com.

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FEATURE

EMERGENCY MANAGEMENT READY OR NOT?

Preparing security managers for mission impossible: safety and security in an open environment

By Rob Hile

INSTITUTIONS OF HIGHER LEARNING ARE, BY VIRTUE OF THEIR MISSION, OPEN ENVIRONMENTS. THEY INVITE CREATIVE THINKING AND RESIST INTERFERING, WITHOUT BOUNDARIES, FENCES OR BARRIERS TO HINDER STUDENTS' ABILITY TO LEARN AT THE HIGHEST LEVEL. TO THE SECURITY PROFESSIONAL RESPONSIBLE FOR PROVIDING A SAFE AND SECURE ENVIRONMENT WHILE MAINTAINING THE "OPEN" NATURE OF TODAY'S COLLEGES, IT'S NOT A MATTER OF IF SOMETHING IS GOING TO HAPPEN, BUT RATHER A MATTER OF WHEN. THERE'S NO WAY TO PREVENT SOMEONE WITH THE INTENT TO HARM THE STUDENT BODY, FACULTY OR THEMSELVES FROM SHOWING UP, NO MATTER HOW MANY SURVEILLANCE CAMERAS OR ACCESS-CONTROLLED DOORS THERE ARE ON THE CAMPUS. THE QUESTION IS THIS: WILL YOU BE READY TO HANDLE THE SITUATION WHEN IT HAPPENS? DO YOU HAVE THE PROPER PROCEDURES AND TECHNOLOGY IN PLACE?

If history has taught us anything, it is that being prepared for any situation or emergency is the best we can hope to achieve. Such organizations as the Federal Emergency Management Agency's National Incident Management System (NIMS) and its National Response Framework have aided private sector organizations by creating an environment for sharing best practices and much-needed subject-matter expertise for the full spectrum of emergency management and response.

Due to a freer exchange of knowledge and best practices, many colleges and universities are investing a significant portion of their energies and budgets to expand their security programs. Their emergency response framework includes all four phases of incident management, not just the basic functions of prepare and respond.

In the past, threat assessments were often conducted by only the federal government, critical infrastructure overseers or chemical/biological organizations. But now, such assessments are becoming standard operating procedures (SOP) for higher education facilities. In addition, organizations are developing disaster recovery, resiliency and business continuity plans to ensure that, when disaster strikes, they can resume operations as soon as possible. It's not good enough to have situational awareness and a generic response plan.

The best defense against a catastrophic event is a strong offense coupled with a solid playbook with well-thought-out procedures for any situation.

Let's explore each phase of the emergency response framework in more detail:

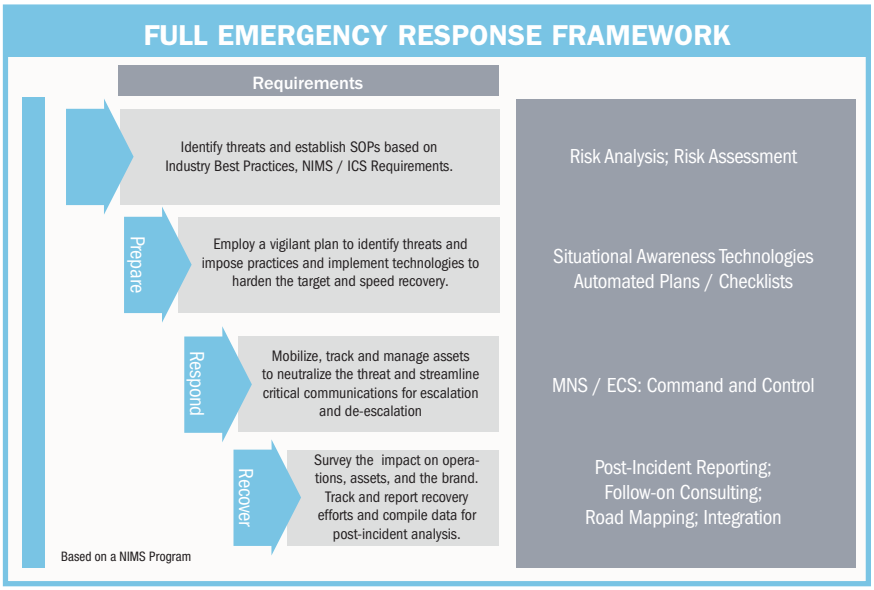
Mitigate: The definition of mitigate is to "cause to become less painful" or "to make less severe." The best way to accomplish this is to identify all known or perceived threats and develop the best way of

dealing with each of them. This is not as easy as it sounds, simply because each facility is different. Even though the threat might be the same—fire, for instance—the student body and faculty's reaction to the threat may differ depending on a number of factors: the type of fire, traffic-flow patterns, lighting, number of exits, a building's layout. Ironically, a number of organizations simply search the Internet for a fire evacuation plan, copy it, place it in their SOP manual and move on to the next task. This is just not acceptable given the unique nature of each threat and of each campus's facility. A number of qualified firms specialize in creating detailed threat assessments for virtually any situation, which would make for a much better evacuation plan. These same firms have assembled best practices from various markets and, in most cases, can help develop an SOP best-suited for your specific facility. Only SOPs specifically designed for your unique situation will help mitigate an emergency situation.

Prepare: Many organizations have spent a considerable amount of time, money and energy on this preparatory phase only to realize when something tragic happened that they were not even close to being ready. As mentioned, without a crystal ball, it's impossible to know exactly when and where a disaster will strike. Unless one has a good foundation that includes professional threat assessments and custom SOPs, it's difficult to adequately prepare for an emergency. For example, proper placement of surveillance cameras in common areas, hallways, lobbies and classrooms is crucial to providing first-responders with critical information in the event of a hostile situation on the campus. Without sufficient planning to identify the best areas to place cameras and the optimal fields of view, how can campus security professionals truly be prepared?

Situational awareness is only part of this equation. Scenario-based role-playing and tabletop simulations are also important elements that should be performed on a regular basis. Without regular training exercises, it can be difficult for security personnel to remember exactly what needs to happen when a tragic incident suddenly occurs. Fortunately, there is help in this area as well. Command-and-control platforms can list SOPs for specific emergencies and provide the operator with detailed written workflow instructions. These systems make it virtually impossible for the operator to make a mistake when dealing with what can be an incredibly stress-filled period of time.

Respond: Probably the most important aspect of the emergency response framework is responding quickly in an organized and accurate manner. The significant provisions of the Jean Cleary Act require institutions of higher learning to make timely warnings to the campus community about crimes that pose an ongoing or immediate threat to the student body or faculty. But what is timely? Everyone has a different answer. It is important that security professionals continue to focus on reducing the response time to as close to zero as possible.



The good news is that integrated security platforms can aid in responding to any emergency by leveraging the power of individual security systems under one common operating system. Grouping specific surveillance cameras in and around a security alarm can provide immediate video verification of any emergency. Geographical Information System integration can provide site-specific location of alarms, including 3-D imaging, to key security personnel. Virtually every aspect of situational awareness can be made available to first responders via their smartphones or PDAs. The campus's mass notification system can be integrated and automated with the integrated security platform to ensure the right message goes out immediately in the event of a specific emergency. All or part of an SOP can be automated, such as locking or unlocking exterior doors and locating and dispatching key security personnel in certain emergencies. In the event the operator fails to follow proper protocol, the system can contact his or her supervisor, or electronically enforce critical emergency procedures. This integration can give the operator all the tools he or she needs to respond quickly, accurately and efficiently to any emergency.

Recover: Often the most overlooked aspect of any emergency situation is recovering critical data after the event. Integrated security platforms have the ability to track and record every aspect of the incident, including any deviation from SOPs, all voice and data communication, critical time-of-response data and video footage. Every aspect of the data can be electronically verified for accuracy. In addition, this data can be used for forensic purposes as a basis for review and revision of current SOPs.

As far as business continuity goes, recovery after a disaster can often be measured in thousands, if not millions of dollars. Having the ability to bring your security platform back online immediately after a failure or disaster is vital. Many of today's systems operate in a virtual machine world that remotely host and mirror key database information, features that contribute to full disaster recovery capabilities.

Remember, it's not *if* something tragic is going to happen, it's when. The ability to implement all aspects of the emergency response framework is critical and essential to managing chaos efficiently and effectively when disaster strikes, turning mission impossible into mission accomplished.

Rob Hile *is director of integrated security systems, Siemens Industry Inc., Building Technologies Division, Security Solutions. He can be reached at* robert.hile@siemens.com.

FEATURE

SCRUTINIZING VIRTUAL TRAFFIC

Student cybersafety capture and analysis tools protect the network

By Angela Fortier

FOR EDUCATIONAL INSTITUTIONS, RECENT ADVANCES IN TECHNOLOGY HAVE ALSO BROUGHT PROBLEMS OF CYBER THREATS, VIRUSES, ILLEGAL MUSIC DOWNLOADING AND EXCESSIVE BANDWIDTH CONSUMPTION. AS MORE FACILITIES INCREASE THEIR RELIANCE ON TECHNOLOGY, THE ABILITY TO MONITOR AND TRACE NETWORK ACTIVITY IS VITAL TO ENSURE BOTH DATA AND STUDENT CYBERSAFETY.

The Bloomington Public School System in Illinois has significant multi-directional traffic on its 98-percent-virtual network across 10 locations. Because more than 9,000 people use the school system's resources, viruses can occasionally infect the network. One recently navigated through the antivirus software the school system had been using. The virus affected more than 100 machines in just a short time, as it accessed botnet websites and sent spam e-mails to propagate itself. Systems Administrator Jason Radford explained that Bloomington's traditional network management tools didn't provide insight into the virus's path to pinpoint the source and the affected machines.

Similarly, traditional tools didn't provide the level of detail that Michigan's Lawrence Technological University needed to manage network traffic through 60 servers on its completely wireless campus. The university's IT team regularly saw a lot of network noise and fluctuating system response times, making troubleshooting difficult and time-consuming. With one of the largest wireless networks in the Midwest, the university was also concerned about enforcing security.

Additionally, Lawrence Tech's large base of international students can cause network outages for atypical reasons, such as when they over-consume bandwidth by using a protocol not standard to the United States or an unfamiliar file program. Tim Chavis, executive director of IT services, needed a networking tool that could allow him to determine the cause of bandwidth saturation and security breech attempts.

The State University of New York at Geneseo also needed to monitor network traffic and prevent access to unauthorized sites. When the Recording Industry Association of America notified SUNY about an aggressive campaign to pursue college students who illegally shared or downloaded music, the university knew it needed detailed network analytics.

As did Bloomington PSS and Laurence Tech, SUNY found that Cisco's NetFlow technology provided deeper insight into network traffic.

"While I was aware of NetFlow, we just couldn't analyze the data without a supplemental technology," said Rick Coloccia, SUNY's network manager.

Scrutinizer NetFlow and sFlow Analyzer from Plixer International provided the detailed graphical analysis and insight that the institutions needed to isolate network threats and monitor traffic patterns. Armed with this technology, the school systems were able to combat viruses and threats, trace use of prohibited websites and isolate causes of bandwidth consumption.

After the Bloomington school system's virus infection, Radford used the software to create reports pinpointing every infected machine, and IT "SWAT teams" were dispatched. Now he can further protect the network by denying access to sites that school policy prohibits.

Lawrence Tech's Chavis recently used NetFlow analysis tools to discover that system response times were suddenly exponentially degraded because one international student used a protocol not standard to the United States. The unfamiliar file program consumed 15 megabytes of bandwidth, leaving only 15 megabytes for 4,500 other users.

Using Scrutinizer's functionality and unlimited automatic archiving to investigate users' access to prohibited sites, SUNY's Coloccia leveraged forensic data: He could confirm or deny RIAA allegations, and then either warn a guilty student severely or clear the name of a student mistakenly accused.

"Prior to implementing NetFlow, we did not have the ability go back in time to see how a certain student on the network was behaving," Coloccia said.

In addition to the Bloomington PSS, SUNY Geneseo and Lawrence Tech, other educational facilities and businesses have recognized the benefits of using NetFlow tools to uphold network security. With automatic logging and reporting on all network traffic, businesses can now understand the detailed interactions between systems.

"Using this technology has changed our processes," Radford said. "Through Scrutinizer, we can drill down to any type of traffic, anywhere on the network, so we can quickly provide answers to what is going on and why."

With advances in networking, organizations need means to combat online threats, monitor student network behavior and ensure proper use of network bandwidth.

***Angela Fortier** has spent the past two years doing public relations work for Plixer International Inc.*

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SOFT WHERE?

Licensing Struggles in a Virtual World

Software licensing has not kept pace with the shift to virtualization on campus. IT administrators discuss the challenges this poses, and debate the future of licensing. **By Rama Ramaswami**

AS VIRTUALIZATION BECOMES commonplace in higher education, it's clear that the traditional licensing options for software are woefully inadequate. The definitions of who is licensed to use what—and where—are blurring, as users move from physical to virtual spaces and can access software from a variety of devices.

In discussing the need for new options, some college IT administrators speak in terms of a revolution, asserting that the old ways of handling licensing simply cannot be adapted to the new reality. Vendors are understandably nervous, though. With an eye on the bottom line, many appear cautious about moving to new models that might prove less lucrative. So today, in the absence of any meaningful change, institutions and vendors often cobble together makeshift solutions that essentially drive a square peg into a round hole.

J.D. King

VENDORS EVALUATE NEW OPTIONS

ALTHOUGH COLLEGES APPEAR to have taken the lead in virtualization, some vendors are working quickly to respond to the new environment. For now, though, that environment is rather hazy. "We're very much in the infancy of what's going to happen," notes Daniel Griggs, virtualization field solutions architect for CDW (*cdw.com*). In Griggs' view, however, virtualization will definitely change the way higher ed institutions view licenses.

"Universities will be able to tell what they have licenses for," he explains. "Today, a lot of them don't even know what they have." He also feels that the impetus for a licensing shake-up will come from the colleges and universities themselves. "It's going to be the users who are driving the changes," he says. "On the vendor side, we may see some vendors go to a type of quota-based scenario."

Griggs points to the case of Citrix (*citrix.com*), which launched a campuswide licensing option for educational organizations back in December 2009. Part of Citrix's Education License Program, the system allows the company's XenDesktop 4 to deliver different types of virtual desktops that students can access from any location or device for one low, fixed cost.

IBM (*ibm.com*) is also making vigorous efforts to change licensing practices, according to Steve Gold, director of worldwide marketing and global education for IBM's SPSS statistics software. Over the past year, in response to the growing use of virtualization, IBM has been offering an SPSS Campus Edition licensing plan that provides optional contract riders for home, hospital, and virtual computer lab use, as well as a variety of software bundles. The plan will eventually be extended to other IBM software products.

"Engaging educational institutions is critical to showing our support for virtualization," says Gold. "Virtualization reduces a number of critical costs for universities so they can redeploy the funds in other areas. The 'win' for the vendor is that universities get the latest and greatest technologies that are in demand in the private sector. The private sector gains from students who are better skilled. If the vendor doesn't supply those technologies, universities may drop the vendor. So it's essential to take the long-term view."

Long before the issue of virtualization even arose, the software-licensing arena already resembled a bizarre puzzle. "Software licenses are notoriously challenging and difficult," says Sharon Pitt, executive director of the division of instructional technology at **George Mason University** (VA), which has a virtual computing lab (VCL) as well as traditional computer labs. "Virtualization has exacerbated the challenge and added a whole new set of difficulties to the conversation."

And, without doubt, some software vendors are struggling to come up with solutions for a virtual environment. "Each vendor has a different agreement," says Raechelle Clemmons, CIO of **Menlo College** (CA), a four-year business school. "Some might allow sitewide access, others only to a particular course, or there might be a one-classroom license."

Even for a small institution such as Menlo, which has about 600 students, licensing is "very challenging when you think beyond the classroom as a one-room construct," notes Clemmons. Menlo's computing environment is almost completely virtual, and its need to run a number of special applications poses a variety of licensing problems.

"We have a vendor who is OK with virtualization, but the company doesn't provide any support for it," explains Clemmons. "And one of our statistics program vendors has a campus version, single-user version, home version, and concurrent version. Which one do you use? Many of those agreements carry through from institutions to faculty home use, but some vendors make you pay more for that environment. But if a campus version is accessed from home, is the license 'home' or 'campus'?"

Certainly, physical location is looming as a key issue. According to Pitt, a traditional license may permit use of the software only on a computer physically situated on the campus. "A lot of our licenses talk about the device or the location of the device," she says. "But when you virtualize, the software may be running at the institution, whereas the student may be accessing it from elsewhere."

Multi-Device Users

Another challenge is what Pitt calls the "consumerization" of technology: the easy

A LICENSE TO DREAM

WHAT WILL ACADEMIC software licensing look like a few years from now? Campus IT directors have yet to come up with a satisfactory answer, but here are the top items on their wish list:

Change outmoded licensing definitions. As physical and virtual spaces converge—and technology advances—such definitions as campus and site licenses may become obsolete. "The definitions will need to be clarified, and the licensing terms and conditions will need to change," says Raechelle Clemmons, CIO of **Menlo College** (CA). "The type of support may need to change, too."

Revamp pricing structures. At the Virginia Software Summit, held in August 2010 at **Virginia Commonwealth University** in Richmond, campus IT heads agreed unanimously that license pricing needs to be streamlined. Suggestions included scaled pricing, with heavy users paying "full price" and light users a lower fee; site licenses only for commonly used tools that software-as-a-service can track; and a new pricing structure for campus/cloud/VCL environments. Virtualization can help develop such a structure, says Art Vandenberg, an information technologist at **Georgia State University**, since it allows campuses to negotiate more forcefully with software providers. "We can go to a vendor and say, 'We have records of usage: We need only 800 licenses, not 10,000 like we had before.'"

Collect and share data. Gathering precise information about software usage is vital to defining standards. And vendors can help by tracking and sharing that data, says Sharon Pitt, executive director of the division of instructional technology at **George Mason University** (VA). "We often end up paying for tools that we don't use. The more forthcoming vendors are, the better we can work with them."

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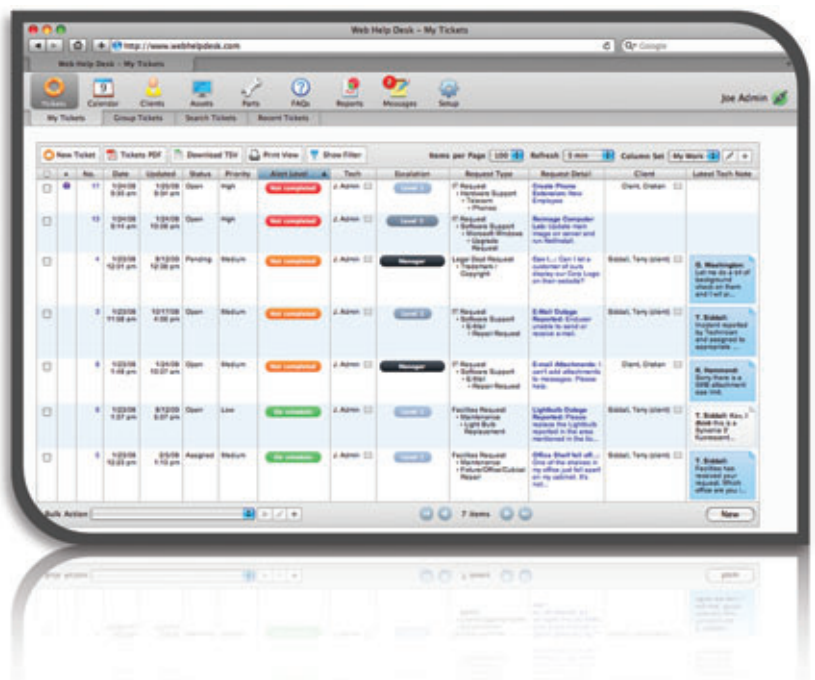

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A VIRTUAL WORLD FREE OF PIRACY

FEW VENDORS HAVE experience working with colleges in a virtual environment, says Henry Schaffer, an information technologist and professor emeritus at **North Carolina State University** and a key architect of NCSU's pioneering virtual computing lab (VCL). As a result, "there's a lot of uncertainty and a lot of fear," he notes. "I believe that vendors are afraid of piracy, but they're also afraid of the unknown, and that the unknown will enable more piracy."

Piracy, he emphasizes, is not an issue at NCSU. "I will not put up with piracy on my campus," he declares. "We allow virtual access and we use virtual hardware, but we follow all the software license requirements just as if they were separate computers."

NCSU uses mostly site or concurrent licenses. What virtualization has made possible, though, is the precise administration of those licenses. The college's VCL, built primarily on the VMware (*vmware.com*) virtualization platform, lets system administrators know exactly which application is in use and by whom.

Users first log in to reserve access to an application. On the next screen, a drop-down menu allows them to choose when and for how long they need the reservation: While the maximum permitted is four hours, it's possible to schedule time for an entire semester-long project. The applications listed in the drop-down menu that follows are controllable on a per-user basis. For example, some software may be licensed to be available only to particular groups, such as a specific class. If a user disconnects (i.e., shuts down his computer) and does not reconnect within a set period of time, the system ends the reservation and makes the "seat" available to other users. In special cases, such as long simulations, the system can be set to ignore a disconnect.

Schaffer is confident that the system ensures complete compliance with licensing requirements. The VCL uses the LDAP client-server protocol for user authentication, and can check with vendors' software license-management programs (such as FlexNet Publisher and KeyServer) to determine if a seat is available. If users ask for a reservation when none is available, they receive a scheduling timetable showing when the next seat will open up.

availability of devices with capabilities formerly available only in classrooms or labs. "Students come to campus with an iPad, a laptop, and a smartphone," she says. "They expect to access the same software from any of those devices. Why should we pay for four copies of a particular license when they use the same software on different devices?"

That's a question several college IT heads are asking. They claim that software should be licensed based on the number of users, not by the device or location. It's certainly an approach that has achieved some traction on campuses. Institutions such as George Mason and **Weber State University** (UT) have been able to forgo site licenses in favor of cheaper individual licenses by installing scheduling software in their VCLs. Students now reserve a time slot to use the software, ensuring that only one student can use a license at any one time.

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To Henry Schaffer, a noted information technologist and professor emeritus at **North Carolina State University**, this kind of approach represents a viable, simple solution. "I don't think vendors should be concerned whether I buy 100 small computers or one big computer," he says. "Instead, they should be concerned about how much of their software I use. A lot of vendors are very nervous, but much of that is not justified. My experience with the vendors is that they are uncertain what virtualization really means."

Ironically, virtualization—and its ability to generate detailed usage data—may lead colleges to purchase more software, not less as some vendors fear. "We're more confident that we can plan what software we need," says Art Vandenberg, an information technologist at **Georgia State University**, which began its virtualization efforts years ago and is now implementing open source VCLs. "In a VCL, we have a better and more granular way of seeing who is using what. We can take our limited dollars and allocate those dollars in a wiser and better way."

And, in Vandenberg's view, those dollars are likely to go toward purchasing additional software modules that a department always wanted but couldn't afford. "Vendors would think there's a whole new marketplace here," he says.

Lee Thompson, deputy CIO at **California State University, East Bay**, concurs. His university recently began a VCL pilot project, and Thompson is working with vendors to make sure it's advantageous to them. "We see it as adding to their business," says Thompson. "It should be a win for them as well as for us."

Facilitating License Management

Reallocating software costs isn't the only benefit of virtualization: For IT administrators, it makes it easier to manage the thousands of licenses a typical institution uses.

"In our environment, we have a lot of named-user licenses to track," explains Sharon Blanton, CIO at **Portland State University** (OR). "And keeping track of individual licenses can be costly. If you move to a virtual desktop, you put the licenses on a server. When the person needs the license, he can check it out, use it, and give it back."

But, laments Blanton, "not every vendor will let you do that. We have to meet with every single software vendor and negotiate."

For now, both vendors and higher ed institutions are feeling their way through the licensing maze, negotiating terms on an ad hoc basis. A notable first step toward defining standards was the Virginia Software Summit, held in August 2010 at **Virginia Commonwealth University** in Richmond. Participants—all higher ed IT directors—focused specifically on the licensing challenges that new technology and new service-delivery models present. The consensus, according to the meeting notes, was: "There are a great deal of options and we do not know what is right." But it's clear that new licensing standards are inevitable, and that they're likely to shake up the industry.

"Vendors don't know how to approach a virtual world," says Cal State's Thompson. "Eventually they will see this as something to their advantage. But for now it is new. This is a paradigm shift that we're all going through." CT

__Rama Ramaswami__ is a business and technology writer based in New York City.

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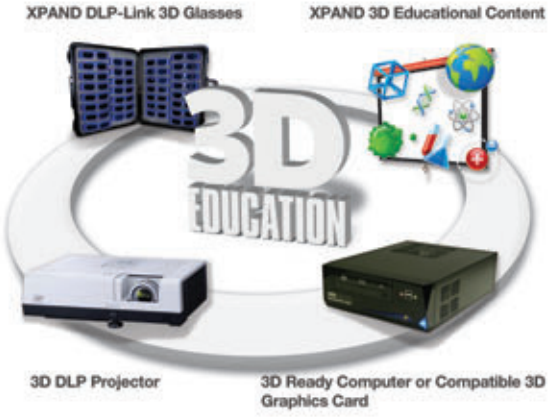

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CT shares insider secrets for negotiating with vendors and getting the deal you want. By Dian Schaffhauser

13 SECRETS OF THE DEAL

WHETHER YOU'RE ON WALL STREET, in Congress, or working in an IT shop on campus, negotiating a good deal is hard work. If you put in the hours up front and prepare, though, you can save your institution a bundle. As higher education enters its purchasing season, *CT* talks to deal makers who've been there and done that. Here are their tips for getting the most value from vendors the next time you buy hardware, software, or services for your institution.

1) Talk to stakeholders before you go shopping.

"The biggest mistake, clearly head and shoulders above everything else, is not getting all three groups—IT people, users, and the purchasing department—involved early on," says Grant Crawford, CIO of the Midwestern Higher Education Compact (MHEC), one of four compacts in the country that help state organizations reduce their costs through consortia-based purchase agreements. Grant stresses that each constituency has a valuable role to play in defining requirements. "You don't want purchasing or IT saying to the other, 'Why did you agree to that?'" he explains. "And you don't want to say to the user, 'Yeah, I went out and bought you this stuff.'" They may not want it.

2) Do the analysis before buying.

Strata Information Group (*sigcorp.com*), an IT consultancy for higher ed institutions, advises its clients to spend time on their business-process analysis before shopping. Strata works with institutions such as **Portland State University** (OR), **St. Mary's University** (TX), and the **San Mateo Community College District** (CA) on strategic planning, purchasing, and implementation of technology. "If you're not careful," says cofounder Henry Eimstad, "institutions will pick a system that looks like the one they have, because that's what they know." If the school can step back and think about what an ideal system would look like, it'll do a better job at selecting a solution that more closely meets its real needs. This approach "gets people working as a team early," explains Eimstad. "It gets them vested in the whole process, which is helpful to the implementation. If the end users feel as if they had a role in determining requirements and making the selections, they'll be more committed to making the system work."

3) Participate in your state's purchasing consortium.

If your institution belongs to a compact, volunteer on a technology committee. Its work can potentially involve hundreds of millions of dollars. In return for your contribution, you'll gain expertise in vendor negotiations. "If you're in a small state college, you're not going to deal with corporate vice presidents when you negotiate," says MHEC's Crawford. "Through committee work you will get that exposure. You'll get to talk about much bigger things, and you'll get to work with a group of people that has very broad expertise in the field."

4) Make just-in-time purchases.

Frequently, when you purchase technology, you need some components earlier than others. The key: Only pay for what you require now. On the hardware side, for example, "don't buy the big production machine needed to support 20,000 machines when what you're doing is testing and training," advises Strata's Eimstad. "The price of hardware goes down and the performance goes up. We say: 'Buy what you need as you need it and grow into it.'" The same is true for software. You'll need certain systems, such as a database, at the beginning, but you won't require plenty of add-on modules for one, two, or even three years. "People typically don't implement degree audit until they've brought up the finance and student systems," explains Eimstad as an example. "So add that later and, at the same time, avoid paying maintenance on it."

5) Solicit bids from at least two viable competitors.

Companies tend to work harder in a competitive situation. But you'll lose that advantage if one of them figures out that it has your business in the bag. "A school falls in love with a vendor and will let that be known," sighs Eimstad. "You don't get much in the way of price reductions if a company knows it has the business." He advises everyone who attends a product demonstration to "put on their poker faces." That means no smiling if participants love something; no frowning if they hate it. "Just do the evaluation and don't indicate which way you're oriented," he says.

6) Vendors are people, too.

A good working relationship with vendors can lead to price breaks, so treat them as you would like to be treated. Sometimes, the small details make all the difference—like recognizing that vendors take holidays off, too. When setting a due date for an RFP, for example, Dec. 20 is a lot more considerate than Jan. 2. During negotiations with a vendor, MHEC's Crawford makes it a policy to ask, "Where do you have trouble dealing with us?" He then promises to work on those areas pinpointed by the vendor. Too often, institutional purchasers also include stipulations in RFPs that have no real bearing on the ultimate decision, but nevertheless require a lot of work, such as supplying the last 10 years of financial statements. Crawford works hard to make sure that any requests made of vendors serve a purpose.

7) A demo is more effective than a lengthy RFP.

In the old days, prospective customers would send out RFPs with hundreds of requirements. "The vendors would work for weeks and weeks responding to those things," recalls Strata's Eimstad. "And the evaluation team was then faced with binders full of information." Now Strata works with clients to nail down key requirements and then develops a script

Just because you're buying gear or software from one vendor, don't assume you also need to purchase services from that same company.

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to guide the vendor through a demonstration. By having scripts, Eimstad says, "you force vendors to show you everything: Show us how to register a student. Show us how to enter a purchase requisition. Show us how to pay somebody. Show us the self-service functions."

8) Negotiations aren't all about pricing.

A price reduction shouldn't be the only item on the table, says MHEC's Crawford: "Consider deals on little stuff that adds up: shipping, longer warranties, multiple addresses for shipping, training, faster delivery, right of refusal." And if you're involved in any kind of collective purchasing, don't forget about the right for existing customers to participate in the new deal. "Many software vendors will not entertain existing customers evolving into the contract when there's a maintenance payment involved, because that's bread and butter to the vendor," says Crawford. "We'll bargain hard to get existing customers included." To take advantage of the new terms, though, existing customers sometimes must buy something new.

9) Avoid signing a contract straight from the vendor.

By their very nature, vendor contracts are going to protect the vendor more than they protect you. That's one reason to work within a buying consortium, such as MHEC, since these organizations have already negotiated vendor contracts that take customer interests into account. A school can still issue an RFP to select a winner, but use the consortium contract—with its pre-negotiated terms—as the actual purchase vehicle. Otherwise, consider hiring an independent consulting firm to help you understand the terms and to represent your interests. Even then, some aspects of a vendor contract may turn out to be non-negotiable. "Good luck on changing very much," acknowledges Eimstad, who says that the largest vendors are often the least flexible. His strategy is to work with the client's legal counsel to figure out what terms and conditions are most important.

"You don't get much in the way of price reductions if a company knows it has the business." *—Henry Eimstad, Strata Information Group*

10) Limit and control escalation factors.

There's usually an escalation clause in a maintenance contract that specifies how much fees will increase each year. "When you look at it, a 7 percent increase doesn't seem so bad for a couple of years," says Eimstad. "But if you project that out 10 years, [the fees] would have nearly doubled."

11) Decide how much training and consulting you need.

When you're buying new technology, the purchase frequently needs to cover additional vendor services. In many cases, says Eimstad, the vendor will either underbid or overbid for these services. Your job is to get the right level of service, and to understand what you're actually buying. This includes items such as travel costs and cancellation requirements. "You can't call a vendor on Friday and say, 'Hey, that consultant coming out on Monday—we don't want him. We're not ready,'" says Eimstad. "That's not fair to the vendor. So find out whether it's two weeks' notice, a month, or something else." Talking with other institutions that have implemented the same software, service, or hardware can be helpful in setting a realistic level of expectation.

12) Look at alternative service providers.

Just because you're buying gear or software from one vendor, don't assume you also need to purchase services from that same company. "We hear, 'Oh, I need to get all the services from that vendor so I have one throat to choke,'" declares Eimstad. "But, at the end of the day, you're not buying to choke anybody. It's about having a good implementation." Going that route limits your options, too. "You have less leverage if they send out a consultant you don't like," he explains. "If you request someone else, they may respond, 'Well, you have to wait six months because nobody is free.'" By not committing to those services up front, you can tell the company you're going to another vendor, which may encourage it to assign a different consultant. If not, you can find the alternative yourself.

13) Walk away if you don't find the right deal.

Sometimes an RFP just doesn't work out, says MHEC's Crawford: Vendors don't respond; the offerings don't mesh with the needs; the terms aren't in the same ballpark as the budget. "Last year we did a web-conferencing RFP and didn't find anything suitable, so we declared it failed and closed up shop on that one," he recalls. In the technology business, change is a given—a year or 18 months may make a world of difference in finding the right product or service. **CT**

Dian Schaffhauser is a senior contributing editor of this magazine.

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Two universities apply the principles of business intelligence to procurement and purchasing, with significant results.

BI BUY

By Jennifer Demski

AT A TIME WHEN HIGHER EDUCATION is enduring stomach-churning budget cuts, institutions are under more pressure than ever to make each dollar count. While cuts in staff and services are often an unpleasant part of the solution, the drive toward greater efficiency also means getting smart about purchasing. And, increasingly, universities and colleges are turning to business intelligence tools to help them monitor spending and find economies of scale.

BI has long been used in higher education to tackle a range of campus issues, but spending is a different kettle of fish altogether: Typically, each university division or department handles its purchasing separately, and often uses different systems to manage contracts, purchase orders, and invoices. Despite the challenges, two institutions—**Bowling Green State University** (OH) and **Cornell University** (NY)—have shown that, with an e-procurement system in place and a lot of hard work, BI tools can lead to significant savings and increased control over how university dollars are spent. And, interestingly, the schools have taken radically different approaches to the problem.

The Macro Approach

When Bowling Green investigated e-procurement solutions as a way to centralize purchasing and increase contract compliance, it discovered that it was not alone in its search. "Three other state schools in Ohio were looking for a similar solution, and another three were already running SciQuest (*sciquest.com*), an e-procurement tool," says Andrew Grant, director of business operations at Bowling Green. "We felt that trying to have a like system across our seven campuses would not only bring some uniformity but would also allow us to look at each other's purchasing data from a centralized point, and to be able to procure with larger volumes—and, therefore, better prices—than we'd have as individual schools."

As a result, in June 2010, Bowling Green adopted the SciQuest e-procurement tool, and became part of an Ohio-based purchasing consortium with **Ohio University**, **Shawnee State University**, **Kent State University**, **Youngstown State University**, **Miami University**, and **Wright State University**.

Although SciQuest is not specifically designed to be a business intelligence tool, the data mined from the shared purchasing histories of the seven schools have provided Bowling Green and its partners with plenty of savings. From an examination of the schools' spending history for maintenance, repair, and operations, for example, the consortium identified a range of identical items that the schools all purchased separately—at a higher price than they would have paid by buying together.

"We can now see that we buy 10,000 units of a specific brand of light bulbs, and another school in the consortium buys 5,000," explains Grant. "We can combine those purchases into a market basket to be purchased from a single vendor, and we can use our purchasing history data as leverage when getting bids from vendors for the lowest price."

In fact, initial data gathered on SciQuest showed a surprisingly high number of technology vendors serving the needs of departments within Bowling Green and the six other schools in the consortium. Grant wanted to deal with just a single tech vendor, so he worked with CDW-G to negotiate a deal for the consortium. The deal eventually grew into a tiered, discounted contract that applies to all 14 schools in the **Ohio State University** system, Ohio's community colleges, and all the private universities within the state of Ohio—87 schools in total. "We now have a relationship with a single vendor with volume discounting on every tech-related category that's better than any group-purchasing organization [GPO] contract in the market right now," notes Grant.

On Bowling Green's campus, the SciQuest e-procurement system has also reduced rogue and noncontract spending in non-tech areas by creating a virtual centralized purchasing department. Online catalogs of more than 40 preferred vendors, with which Bowling Green or a third-party GPO has negotiated favorable contracts, are available to university staff through the SciQuest tool. Purchase orders are automatically generated through the system, rather than being handwritten and processed into separate systems by each department.

"These automated processes mean that we have more contract compliance and more purchasing data than ever," says Grant.

By using SciQuest to consolidate the school's contracted vendors and make catalogs of preferred vendors available, Bowling Green has averaged savings of 15 percent. Plus, Grant can identify any purchases made from vendors with which Bowling Green has not negotiated a contract, allowing him to follow up.

"SciQuest drives people toward the contracts," explains Grant. "It drives people toward the partners that we want them to use, with whom we've negotiated the best deals."

The Micro Approach

Like Bowling Green, Cornell University wanted to centralize its spending and reduce costs when it first began exploring the use of BI tools in purchasing. Instead of leveraging the power of a consortium, however, Cornell focused its efforts on creating a data system that could drill down to the stock-keeping unit (SKU) level, and had the flexibility to create reports on a variety of data points so sourcing managers could identify cost-cutting opportunities across the university's campuses. Back in 2007, the school had implemented a third-party system to do this, but found it too rigid for the higher ed market.

"We needed to be able to separate data into restricted and nonrestricted funds, federal dollars and state dollars," explains Thomas Romantic, senior director of supply channel management and business services. "We needed to have more control over how the data was classified, and to be able to modify how we classified the data as our knowledge grew."

In 2008, Cornell began work with Tonto Verde, a Phoenix-based software company, to create Spend Viz (*spendviz.com*), a robust data-analysis and reporting tool. Spend Viz pulls purchasing information from Cornell's existing payment-requisition, procurement-card, and e-procurement systems to provide a complete view of enterprise spending, including what's being purchased, by whom, and from whom. Detailed levels of classification can be retroactively modified as reporting needs change.

When the university unveiled the tool in July 2009, it simultaneously launched a five-year procurement-savings initiative on Cornell campuses. On the table was $450

"These automated processes mean that we have more contract compliance and more purchasing data than ever."

—Andrew Grant, Bowling Green

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million, out of which the school aimed to cut $30 million to $40 million by 2014. "That's an 8 percent to 10 percent reduction that we need to identify by using data to consolidate vendors, consolidate spending, and explore different ways of attacking things," notes Romantic. To date, the university has achieved $6.5 million in reductions through its use of the Spend Viz system.

As a major research institution, Cornell spends a significant amount on lab and scientific supplies. By running purchasing data through the Spend Viz system, the university was able to determine how much money was being spent with each of its supply manufacturers. It then leveraged the relationship between the manufacturers and their four main distributors to reduce the costs of the most common lab and scientific supplies.

"We're trying to spend with a distributor *through* a manufacturer," explains Romantic. "The manufacturer now provides discounts to us directly because it's getting visibility and recognition on campus that it wasn't getting before." This approach alone has garnered savings in excess of $1 million.

And by tracking purchasing data to the SKU level, including quantity and historical pricing information, Cornell has been able to hold reverse auctions for commodities (such as toner), where three or four suppliers are invited to an online bidding event. For 15 to 30 minutes, vendors anonymously bid against each other in an eBay-style auction on a list of SKU numbers and corresponding quantities.

Before Spend Viz performed a SKU-level analysis, this type of bidding event wasn't possible at Cornell. "It's one thing to know that you're spending *x* amount on a specific commodity, but you need to know the specific SKUs that are driving that spending," explains Romantic. "With Spend Viz, we can use the historical pricing data to set a baseline to calculate our savings." Cornell's reverse auctions typically result in prices 10 percent to 25 percent lower than those established after years of bidding and renegotiations.

Although Spend Viz was intended to be an internal tool for Cornell's procurement office and sourcing managers, significant interest on campus has seen its use expand to 85 to 100 users in various departments.

These users can create and view department-specific reports with the tool's dashboard, and request the inclusion of data specific to their departments' needs. For example, the university's community-relations team tracked spending by ZIP code so they could determine how much money the school was spending with local businesses. "Because we designed the classification, rules, and business logic that apply to our data, we can easily go back and run the data through a reclassification program," notes Romantic. "It's very powerful, and it's why we created our own tool. You need to have control of your data and understand exactly how your data is being classified." CT

Jennifer Demski *is a freelance writer based in Brooklyn, NY.*

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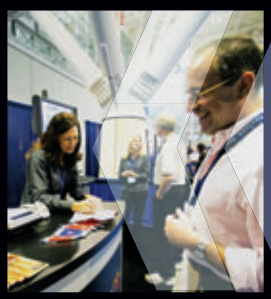

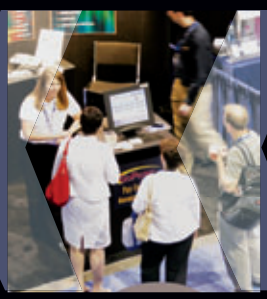


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A New Frontier in Security

IT's job is to find security strategies that enable mobile and social apps.
By Mary Grush

For more than a quarter-million students each year at the **Los Angeles Community College District**, mobile devices and social software are critical tools for success. That's because these are often students' best and sometimes only ways to connect with peers, instructors, and education resources. In a recent interview, *CT* asked LACCD CIO Jorge Mata to discuss how institutions need to adapt their security strategies to encompass—and embrace—these tools.

CAMPUS TECHNOLOGY: What is the impact of social software and mobile technology at LACCD?

JORGE MATA: Social media and mobility represent incredible promise at LACCD and in higher education in general. It is about going where the students are: The customers are there, and that's where you want to have your message. You want to join the dialogue, because the big conversation that uses these tools is going on 24/7, and it's going in every direction.

CT: What are the usual expectations about security relating to mobile and social media?

MATA: I think there is a tendency on the part of some administrators, once issues of security are brought up, to try to stop the conversation—it's often the first reaction. But as I always tell my boss, "If you only want me to tell you to *stop*, you are paying me way too much." IT departments and professionals should be in the business of *how*: How do we leverage social software and mobility? How do we make it safe? How do we allow the right things to happen?

A lot of older security technology has been very black and white—either "yes, you can do it," or "no, you can't." But the amount of content is so overwhelming now, that the minute you say no to one thing, you create a detrimental effect on another. For example, your institution may have a course on social media that actually teaches and requires the use of social software tools that you might have blocked in another context. You can't take a draconian approach in higher education. To me, blocking is a manifestation of failure—a sign that I've not been able to do my job. Again, I'm really in the business of *how*, and that's where I should put my efforts.

"IT departments and professionals should be in the business of *how*: How do we leverage social software and mobility? How do we make it safe?"

CT: Are social software and mobility dramatically changing the way you approach security?

MATA: Absolutely. In the past, user interactions were siloed, as in one person talking with a particular application. With newer, mobile technology and social media, you are suddenly looking at thousands of conversations that are happening simultaneously. This is overwhelming to traditional security, to legacy tools. We need to use security tools that are appropriate for this new environment, tools that will let you find that one element within thousands of concurrent sessions that may be an attack—find it and then surgically remove it.

That's what's new in security strategy: technology and security professionals looking more at the behavior and dynamic nature of interactions. This is not something that we did in the past. If you have chosen to stick to your traditional tools, you are already in trouble. Instead, you now need to use leading-edge security technologies—tools that can be driven by policy, that recognize identity, that work with mobile and social applications and their subcomponents in ways that let you apply business rules. You can't just block applications anymore. Applications tied to a specific port that you can turn off are a thing of the past. You have to understand how to enable applications safely. We will all be going in that direction. It's just a matter of time. **CT**

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