Tackling Unified Communications p. 12 ▪ Pico Projector Roundup p. 16

CAMPUS TECHNOLOGY

Empowering the World of Higher Education

February 2011

BONDING WITH YOUR CFO

A strong CIO-CFO relationship is critical to the success of your institution—and your department.

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TECH GETS PHYSICAL
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E-PROCUREMENT SPEEDS RESEARCH
Page 34

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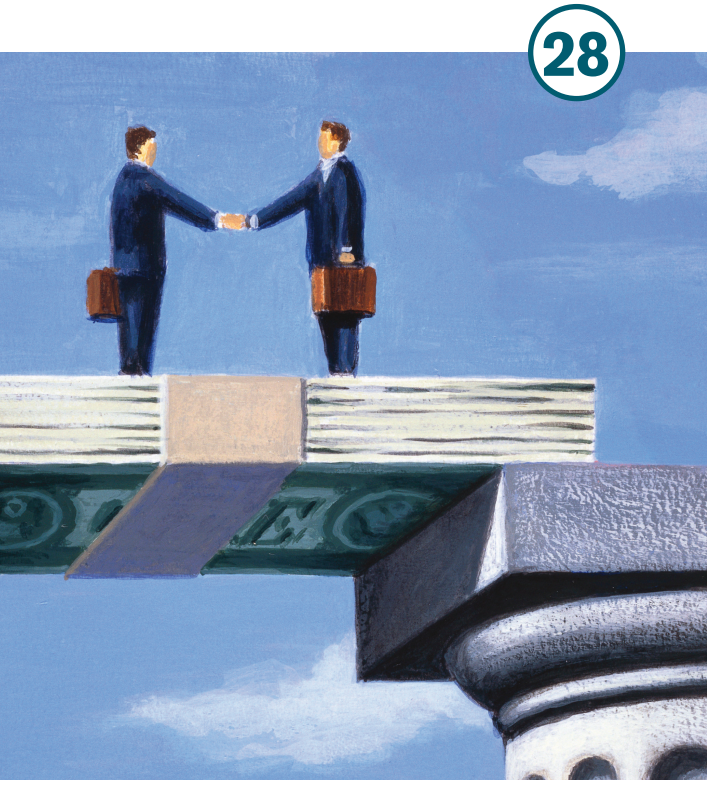

Features

Campus Technology Innovators Awards
Final entry deadline: Feb. 15
campustechnology.com/innovators

Correction: In "A Mobile Education," *CT* January 2011 (*campustechnology.com/articles/2011/01/01/a-mobile-education-student-created-apps.aspx*), the pricing information for Blackboard Mobile Central was incorrect. Blackboard Mobile Central is available on an annual subscription basis. *CT* regrets the error.

The New Transparency

Exposing the "dirty little secret" of bad college teaching may actually lead to its improvement.

Trent Batson, an online columnist for *CT* and the executive director of the e-portfolio advocacy group AAEEBL, wrote a piece in November on "voodoo education," essentially debunking the value of the "sage on the stage" model of teaching in colleges and universities. (To read his column, go to *campustechnology.com* and search on "voodoo.")

Many of the comments he received were defensive of traditional lecture-based teaching, and they had a point—there is nothing inherently wrong with a lecture. If it's a good lecture, that is.

What I found interesting, however, is how some commenters wanted to defend the overall practice of college teaching, when, it seems to me, few colleges are serious about supporting teaching as a practice.

If you are a gifted college instructor, that is your students' good luck. Maybe you work at an institution that actually values teaching—that systemically provides mentors, training, incentives—but more than likely, you do not. While almost every university will say that it strives to be a center of teaching excellence, the fact is that most higher education institutions are set up to support and reward scholarship; tenure is almost always based primarily on a faculty member's academic publishing record. Teaching is usually ancillary to the holy grail of scholarship.

Batson's point was that technology can improve teaching by making it "viable and visible." I don't know that technology, ipso facto, makes teaching more viable, but it certainly makes it more visible, and that transparency may be the very thing that will prod universities into actually doing something to improve the state of teaching at their institutions.

Think about it: Do we really want to capture a lecture that is dull as an old knife, or have students sit through an online course that's built out of someone's lecture notes pasted into PowerPoint slides?

The dirty little secret about bad college teaching is that it has never really been a secret—but it does happen behind closed doors. Now, with technologies like online learning, lecture capture, and iTunes U, poor teaching is out there for everyone to see.

That could—or should—be scary for many higher ed institutions. Most undergraduate students don't choose a college based on its scholarship record—but they do want to go to a school where they believe they will be taught well. All it could take is one bad teaching example on YouTube for a college to find itself defending its reputation as a teaching institution to new recruits.

CT is going to write about this topic in an upcoming issue, and we'd love to hear from you. Does your institution support and reward good teaching? Have you seen instances where technology has exposed an underbelly of bad teaching, and how did your administration react? Have you seen any evolution in how your institution rewards good teaching, perhaps through changes in the tenure process? E-mail me your observations at the address below. **CT**

—Therese Mageau, Editorial Director
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CAMPUS TECHNOLOGY

campustechnology.com vol. 24 no. 6

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UPCOMING EVENTS

February

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Instructional Technology Council
eLearning 2011
itcnetwork.org
St. Pete Beach, FL

FEB 22 - 24
Digital Signage Expo 2011
digitalsignageexpo.net
Las Vegas, NV

FEB 23 - 25
Society for Applied Learning Technology
New Learning Technologies 2011
salt.org/fl/orlandop.asp
Orlando, FL

FEB 25 - MAR 1
National Association of College Stores
CAMEX 2011
camex.org
Houston, TX

FEB 27 - MAR 2
League for Innovation in the Community College
Innovations 2011
league.org/innovations
San Diego, CA

March

MAR 1 - 3
Next Generation Education Summit
ngesummit.com
Marina del Rey, CA

MAR 7 - 11
Society for Information Technology and Teacher Education
SITE 2011
site.aace.org/conf
Nashville, TN

MAR 13 - 16
Association of College and University Auditors
2011 ACUA Midyear Conference
acua.org/cpe_events/midyear_conference.asp
Orlando, FL

MAR 13 - 16
American Association of Collegiate Registrars and Admissions Officers
AACRAO 2011 Annual Meeting
aacrao.org/seattle
Seattle, WA

MAR 26 - APR 4
The SANS Institute
SANS 2011
sans.org/info/65598
Lake Buena Vista, FL

MAR 28 - 29
The Sloan Consortium
8th Annual Sloan Consortium Blended Learning Conference and Workshop
sloanconsortium.org/blended
Oak Brook, IL

MAR 30 - APR 3
American Society for Information Science and Technology
IA Summit 2011
iasummit.org
Denver, CO

April

APR 3 - 6
Association for Information Communications Technology Professionals in Higher Education
2011 ACUTA Annual Conference & Exhibition
acuta.org
Orlando, FL

APR 3 - 8
The Data Warehousing Institute
TDWI World Conference
tdwi.org
Washington, DC

APR 4 - 6
California Community Colleges Chief Information Systems Officers Association and SecureIT
CISOA/SecureIT 2011
secureitconf.com
Santa Clara, CA

APR 9 - 12
American Association of Community Colleges
91st AACC Annual Convention
aacc.nche.edu/convention
New Orleans, LA

APR 17 - 20
National Association of Campus Card Users
2011 Annual Conference
naccu.org/2011
Baltimore, MD

May

MAY 1 - 4
United States Distance Learning Association
2011 USDLA 5th Annual Conference
usdla.org/2011_national_conference
St. Louis, MO

>> For more events, go to:
campustechnology.com/calendar

>> To submit your event:
Send an e-mail to Rhea Kelly (rkelly@1105media.com)

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Viewpoint

Not Your Grandfather's Blackboard?
Columnist Trent Batson recounts his recent chat with Blackboard Learn president Ray Henderson.

campustechnology.com/viewpoint

Features

A Push for Collaborative Workspaces
A CIO has introduced his college to a virtual environment where most communications and collaboration take place online, creating a digital working and learning hub while cutting back on paper waste in the process.

IT at Your Service
In implementing a new collaborative learning environment and educational portal, the IT department at **New York University**'s Stern School of Business has had to make some cultural changes.

How Next-Gen Automotive Engineers Are Educated
The three-year EcoCAR competition is nearing its end. Along the way, students have gained a hands-on education in hybrid vehicle design—but that's just the beginning.

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Does Your Campus Wireless LAN Make the Grade?
Learn what your peers and the industry best-in-class do to maximize network throughput, while they improve security and lower their total network cost.

HEOA Compliance for Managing Illegal File Sharing From a Community College Perspective
Community colleges face unique challenges when evaluating and implementing HEOA compliance solutions. Here's what you can do to educate students to become better digital citizens.

Improve Communication and the Classroom Experience
A cloud-based, faculty-focused LMS integrated with a campus portal at **Berklee College of Music** (MA) has fostered better campuswide communication and created an easier, more efficient way to deliver content and manage and evaluate courses overall.

NEED TO KNOW

Innovators: Final Deadline Feb. 15
The entry period for our 2011 Campus Technology Innovators Awards is drawing to a close. We seek exemplary colleges and universities, their visionary technology project leadership, and their innovative vendor partners who have deployed extraordinary campus technology solutions to campus challenges. Is your innovative technology project a model for others to follow? Nominate your institution, technology project leader(s), and vendor partner(s) by Feb. 15! For entry info, go to *campustechnology.com/innovators*.

CAMPUS TECHNOLOGY innovators AWARDS 2011

In Box

"Why do portfolios always seem to end with graduation? In years past (the paper world) I can see why, but there is no reason for that now." —*Brian, NY*

Read this and other reader comments at *campustechnology.com/articles/2010/12/01/review-of-portfolios-in-higher-education.aspx*.

Top Stories

- **DeVry** (various locations) Switches to HP for Intensive Student Computing
- Michigan Universities Pool Funds to Buy More Cores
- iPad Pilots at **U Houston** and **CDI College** (Canada) Take Off
- **Bryant U** (RI) Data Center Cuts Energy Use by 15 Percent
- Program Aims to Help Faculty Master Online Instruction
- Delaware Moves Forward With Transcript Transfer Portal Project
- **William Jessup U** (CA) Adopts Online System to Manage Student Lifecycle

campustechnology.com/topstories

Research

Can Higher Ed Tech Support Benefit From a Tech Makeover?
Fewer college IT departments are currently using technology to automate help features compared with their counterparts in other sectors. Read more at *campustechnology.com/articles/2010/12/17/can-higher-ed-tech-support-benefit-from-a-tech-makeover.aspx*.

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Campus Industry

TECHNOLOGY HAPPENINGS IN HIGHER EDUCATION

NEWS

SETTING ONLINE STANDARDS. **Excelsior College** (NY) is working with the Council of State Governments and others to determine the scope and nature of information that states require to validate the credibility of online, out-of-state post-secondary programs. The work is being funded by a $300,000, two-year grant from the Lumina Foundation, a billion-dollar nonprofit whose goal is to enroll and graduate more students from college. Read more at *campustechnology.com/articles/2010/12/17/excelsior-college-to-research-need-for-interstate-compact-for-higher-ed-regs.aspx*.

HEALTHY RETENTION. **TCS Education System**, a private, not-for-profit higher education system comprising colleges and graduate schools in Southern California, Chicago, and Washington, DC, is adopting an online student health and wellness program intended to reduce attrition related to health issues. The system is implementing Student HealthQuest from EducationDynamics, a company that provides services related to student recruitment and retention. HealthQuest is a web-based program that educates students about physical and psychological health and wellness to reduce the impact of psychological disorders or physical health complaints. The program also includes a private social network to encourage self-help.

LAST CHANCE: INNOVATORS AWARDS. Call for entries ends Feb. 15! Enter at *campustechnology.com/innovators*.

SMART CLASSROOMS. The new, 300,000-square-foot Liberal Arts Building at **Towson University** (MD) is using Crestron technology to deliver a consistent user interface for classroom equipment, and to centralize monitoring and remote support in every space. In each classroom, a Crestron TPS-6L touchscreen is lectern-mounted, giving instructors one-touch system control of the whole room. When a class is over, the touch of a button shuts the system down and prompts for the next class. Crestron's RoomView enterprise management software allows IT staff to remotely control and troubleshoot all AV and room lighting in each classroom from the central support desk.

TOWSON U is relying on Crestron control systems to help manage 80 classrooms in its new Liberal Arts Building.

VIRTUAL DESKTOPS. At the **University of Tennessee at Martin**, IT administrators are rolling out desktop virtualization to provide the school's 8,000 students and staff members access to their desktops, files, and network resources from multiple locations and computing devices on campus. The university has deployed Citrix XenDesktop to deliver Windows desktops and applications on 45 computers in three campus locations, and will soon roll out the software on 900 computers in labs and department offices. The technology allows IT to bundle the operating system, applications, and user profiles, store them centrally, and then deliver a specific desktop image to a user.

PERSONALIZED LEARNING. **Arizona State University** is implementing Knewton's Adaptive Learning Platform for developmental math courses and two of its largest college-level math courses. Intended to help learners prepare for the rigors of college-level academics, the platform creates a learning experience that is customized for each student. The Knewton system determines each student's learning weaknesses and important concepts, and then delivers personalized study materials based on what a student knows and how he learns best.

EMERGING SECURITY THREATS. Social media, mobile devices, and Apple platforms will top the list of targets for emerging security threats this year, according to McAfee's *2011 Threats Predictions* report (*mcafee.com/us/business-home.aspx*). As the report warns, the use of URL-shortening services on sites like Twitter will make it easy for cybercriminals to mask and direct users to malicious websites, and the personal information collected by geolocation services such as Facebook Places will enable criminals to craft more targeted attacks. In addition, the rising usage of mobile devices and Apple hardware will mean an increase in attacks on those platforms.

MANAGING DOC STORAGE. **Antioch University** (various locations) recently selected Perceptive Software's ImageNow solution to digitize hundreds of boxes of documents. In addition to alleviating storage challenges, the implementation solved a health issue—many of the stored documents were covered with mold. **CT**

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

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Tackling the Transition to UC

To implement unified communications on campus, it often pays to take a phased approach.

MINOT STATE'S UC revamp helped put the school on the cutting edge.

Courtesy of Minot State University

YOU HAVE AN AGING PBX system that desperately needs upgrades. You would like to dump it in favor of unified communications (UC), but you fear it might be difficult—if not impossible—to pull off the transition, given your tight budget and limited staff.

These were the challenges that faced two schools that lie, coincidentally, just 110 miles apart in the vast spaces of North Dakota. Both schools, members of the **North Dakota University System**, decided to bite the bullet and forge ahead with a UC implementation. And while their final solutions differ, how the two schools managed the tricky transition process carries useful lessons for institutions considering a similar move.

The secret, according to Cathy Horvath, director of information technology at **Minot State University** (ND), is to take a phased approach and to set realistic goals. A small institution with 3,700 students and about 600 faculty, Minot State had a critical decision to make in December 2009. The maintenance contract for its outdated analog/PBX telephone infrastructure was ending. The provider, Avaya, had quoted a price of more than $400,000 over the next three years for maintenance and upgrades.

At the same time, affordable solutions incorporating unified messaging and voice over IP (VoIP) were increasingly available, offering advanced functionality and potential cost savings. Horvath realized that a complete switch over to UC would take time, but she believed she could handle the transition in stages. With just Horvath and two IT staff members dedicated to the project and no consulting budget, it was crucial to focus on just a few essential elements. Her key goal, though, was to integrate various communication types. "We wanted to have collaborative services and be on the bleeding edge," she says.

One Step at a Time

First, Minot State decided to outsource student e-mail, leaving only faculty and staff in the unified messaging project. "We figured we could handle the project more easily by having students off our system," explains Horvath. "You have to make some decisions about whom you're going to service and to what extent."

Second, by sticking with the old PBX system, it was clear "we were not going to get where we wanted to go," she says. "So we took the money that had been targeted for upgrades and used those dollars to set up a unified messaging environment."

Since the university was already using Microsoft servers and software, it was relatively easy to add a gateway that would move PBX voicemail to Microsoft Exchange Unified Messaging. This allows users to interface across multiple devices—computer, desk phone, or personal digital assis-

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Test and Train for UC Transitions

UNIFIED COMMUNICATIONS (UC) is an architecture that integrates multiple forms of human and device communication in both real and non-real time. From a single point, users can access messages from multiple devices and media types—for example, they can receive a voicemail message and respond via e-mail or cell phone. UC also integrates "presence," or the ability to detect whether the intended recipient of a message is online and available to accept text chat or video calls.

Its immense flexibility makes UC a powerful tool for improving operational efficiency. In a poll of 915 IT professionals (161 from higher ed institutions) conducted by CDW-G in 2010 (*newsroom.cdwg.com/news-releases/news-release-03-01-10.html*), 54 percent of respondents viewed UC's biggest benefit as the reduction of operating costs; 50 percent cited increased productivity as the second-most-important benefit. At the time of the survey, 19 percent of higher ed respondents had already installed UC, while 66 percent were preparing a UC business case, up from 41 percent in 2009.

Implementing UC, however, requires organizational and technical changes that can be difficult to accomplish quickly in an academic setting. Staff training can be a major issue, especially for employees who may have been working with traditional telecommunications systems for decades. "Moving from a PBX into the converged IP infrastructure realm is difficult," says Todd Schmitzer, manager of networking and telecommunications information technology at **Santa Clara University** (CA). "Your data people also need training. The infrastructure is the same, the packet routing is the same, but the quality of service is different and the requirements are different. You're not just dealing with dropped phone calls."

It's also vital to do a test run. "Pilot it first," advises Ron Danielson, SCU's CIO. "To use a Silicon Valley phrase, we drank our own champagne. We worked kinks out in private before we went public with it."

To prevent a UC project from getting sidelined, Danielson says that schools should put together a solid project timeline, especially when resources and staff are scarce. "We did not have a defined timeline we were trying to meet," he says, as explanation for the delays that the university experienced during implementation. "We got stalled because we simply got busy. Deadlines are everybody's best friend."

tant—and access different modes of communication, such as voicemail and e-mail. "It required some server hardware, but not a huge investment in hardware or software," says Horvath.

Horvath couldn't drop telephones completely, however. The university also had analog fax machines that required support during the migration to an IP-based system. So, in the second phase of the project, Minot State purchased ShoreTel IP phones for call management, integrating ShoreTel's VoIP systems with Microsoft's Exchange Unified Messaging and Office Communications Server. "We are using Microsoft to do all the collaborative pieces, but the ShoreTel is to get out to the world through voice," Horvath says.

The next step for Minot State is to replace all analog phones with Shoretel handsets and, eventually, test the newest version of Microsoft Lync Server, which offers an extensive set of UC features and interoperability with existing systems. "Unified communications is a moving target for many organizations, and Lync will be changing the environment even more," says Horvath. "In 'true' unified communications, you wouldn't even have a PBX. But Microsoft offers linkages for different PBXs, which makes it easy. That's how technology works in a lot of cases—at some point you have to find a link from the old to the new."

Adding UC and Wireless Together

Bridging old and new was also a priority for **Lake Region State College** (ND), a two-year community college that serves about 1,700 students on two campuses—Devils Lake and Grand Forks Air Force Base—and through online learning programs. Like Minot State, Lake Region was stuck with an aging PBX system that needed upgrading. But CIO Toofawn Simhai was also interested in implementing a campuswide wireless network. In 2009, she decided to do both.

The PBX system was particularly problematic. "We were getting phone service from a company located in Minnesota, so any time we had to make a change to our phone, we had to get a technician to drive 100 miles out here," says Simhai. "We didn't have any local people on campus supporting the phones." Using Corporate Technologies, a Cisco partner, Simhai upgraded to a Cisco 10 Gb wireless network and replaced analog phones with a Cisco unified communications system, including Cisco IP phones in all residence hall rooms.

The new system has streamlined operations at the college and enhanced productivity, as well as enabled quick campuswide notification in case of emergencies. Conferencing features allow quick virtual meetings, and calls between Lake Region's two campuses now require just four-digit dialing instead of a long-distance connection.

What's more, all this came at a reasonable cost, says Simhai. "We don't have a big IT staff here, so we needed to partner with a company that was reliable and supportive," she says. "They gave us a good deal on this implementation, with educational discounts and special incentives. It really wasn't very expensive." **CT**

Rama Ramaswami is a business and technology writer based in New York City.

Resources

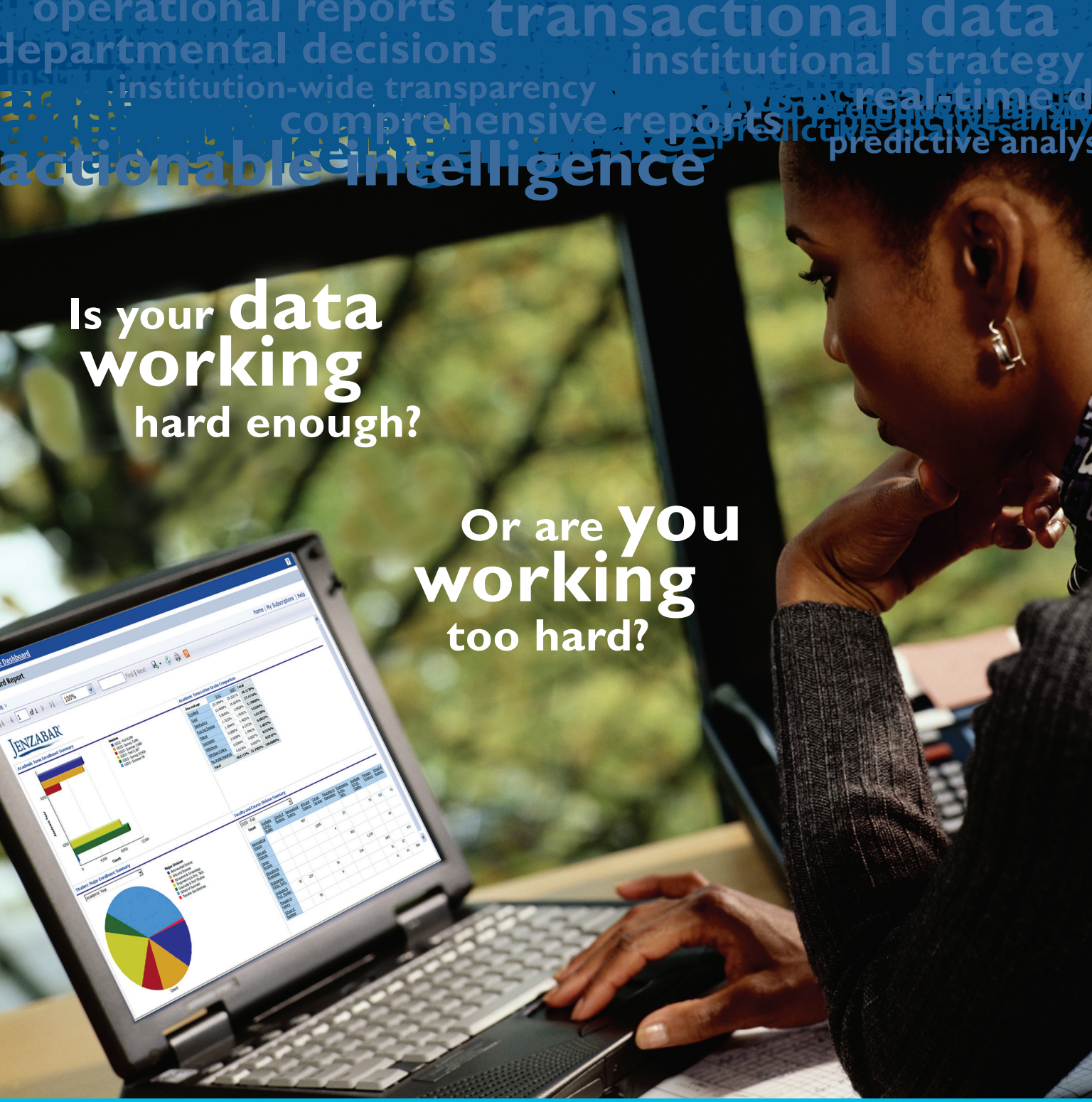
Avaya: avaya.com/usa/industry/education

Cisco: cisco.com/en/US/products/sw/voicesw

Corporate Technologies: gocorptech.com/voice-data-network-management.php

Microsoft: microsoft.com/exchange/en-us/unified-messaging.aspx

ShoreTel: shoretel.com/solutions/ip_phones



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jennifer demski

Tiny…Cute…Powerful!

For anytime, anywhere presentations, these pint-sized projectors promise full functionality from the palm of your hand.

PICO PROJECTORS ARE POISED to be the next must-have device. Talk about supporting informal, mobile education: These pocket-sized projectors have the potential to bring small group collaboration to the next level by allowing participants to stage impromptu presentations in almost any environment. But can a projector really be *that* portable? And what level of clarity and brightness do pico projectors offer, given their small size?

Campus Technology recently surveyed the tech market in the hopes of answering those questions. The technical specs of the 29 models uncovered in our search definitely show promise. Here's a quick overview of what we found:

Each projector weighs less than 2 pounds; in fact, 23 of the models weigh in at less than 14 ounces.

At 1.8 pounds, LG Electronics' HS201 is the heaviest—but it's also the brightest, with an output measuring 200 lumens.

Conversely, the smallest projectors are the least bright, with some measuring in at 10 lumens and below, which should be acceptable in a dark room but problematic with ambient lighting.

Each of the projectors features a long-life LED lamp. The exception: two laser-based models—Microvision's SHOWWX+ and AAXA's L1 v.2—which are on par with the LED models for lamp life, but also offer the benefit of staying in focus even on curved or uneven surfaces.

Each model is compatible with a wide range of devices, from laptops and personal gaming systems to DVD players, digital cameras, and smartphones.

In the following pages, we've grouped models based on portability, image quality, independent playback capabilities, and truly unique functionality. (Note that these lists are based on manufacturers' specifications; *CT* has not done any product testing to verify manufacturers' claims. Prices listed are the MSRP.)

For a complete listing of all the pico projectors included in our survey, sortable by feature, check out *campustechnology.com/picoroundup*.

Portability

Could a projector be as easy to carry in your pocket as an iPhone? Weighing in at under 5 ounces, these four projectors are not only as light as a smartphone, they can also project media directly from it (*adapter cables required). Pop a smartphone and one of these four pico projectors in your pocket, and you'll be ready to give presentations at the drop of a hat.

MODEL	WEIGHT	DIMENSIONS (H x D x W)	BATTERY LIFE	PRICE
Microvision SHOWWX+	4.3 ounces	(0.55"x4.64"x2.36")	2 hours	$399
AAXA P1 Jr.*	4.4 ounces	(0.8"x4.1"x2.2")	1 hour	$119
Optoma PK102*	4.4 ounces	(0.67"x4.17"x2")	1.5 hours	$229
Digishow Handheld Projector*	4.9 ounces	(0.7"x4.4"x2.4")	2 hours	$350

Photos courtesy of Microvision, Optoma, BenQ, Aiptek, Samsung

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Image Quality

Pico projector manufacturers proclaim that you don't have to sacrifice brightness and image quality for portability. These five models all feature LED lamps with a brightness ranging between 75 and 200 lumens, and all are capable of projecting crisp images that measure at least 80 inches diagonally.

MODEL	BRIGHTNESS (in lumens)	IMAGE SIZE (diagonal)	LIGHT SOURCE (with typical life span)	NATIVE RESOLUTION	PRICE
LG Electronics HS201	200	17"-95"	LED (30,000 hours)	SVGA (800x600)	$499
Acer K11	200	15"-80"	LED (30,000 hours)	SVGA (858x600)	$369
AAXA M2	110	7"-100"	LED (15,000 hours)	XGA (1,024x768)	$369
BenQ Joybee GP1	100	15"-80"	LED (20,000 hours)	SVGA (858x600)	$399
AAXA M1 (Ultimate and Limited models)	75	10"-100"	LED (15,000 hours)	SVGA (800x600)	$299

Independent Playback

Do you need to conduct an on-the-spot presentation without connecting to a laptop or other external source? Check out these four models; each boasts an onboard media player, over 1 GB of internal memory, and integrated speakers. They can even read and project files directly from media cards and/or USB jump drives.

MODEL	INTERNAL MEMORY	INTEGRATED SPEAKER(S)	ONBOARD MEDIA READER(S)	PRICE
3M Pocket Projector MP180	4 GB	0.75 W stereo speakers	MicroSD Card Reader	$449
Aiptek PocketCinema V10+	4 GB	0.5 W stereo speakers	SD SDHC MMC MS Pro Media Card Reader	$269.99
Aiptek PocketCinema V20	2 GB	0.5 W mono speaker	SD SDHC MMC Media Card Reader	$299.99
AAXA M2	1 GB	1 W stereo speakers	USB Media Stick SDHC Card Reader	$369
AAXA M1 (Ultimate and Limited models)	1 GB	1 W stereo speakers	USB Media Stick (Ultimate only) SDHC Card Reader (Ultimate and Limited)	$299
Samsung SP-HO3	1 GB	1 W mono speaker	USB Media Stick SDHC Card Reader	$299.99
3M Pocket Projector MPro150	1 GB	0.5 W stereo speakers	MicroSD Card Reader	$275
AIPTEK PocketCinema V10	1 GB	0.5 W stereo speakers	SD SDHC MMC MS Pro Media Card Reader	$199.99

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Unique Functionality

These four projectors each incorporate one unique feature that sets them apart from the pack, from AV-In recording to WiFi and Bluetooth connectivity.

MODEL	FEATURE	PRICE
3M Pocket Projector MP180	WiFi/Bluetooth connectivity allows you to access files stored on WiFi- or Bluetooth-enabled devices. The connectivity extends to the internet.	$449
Aiptek PocketCinema V10+	AV-In recording enables you to record content directly from a TV, VCR, DVD player, or any device with an RCA output, and then play back that content directly from the projector.	$269.99
iGo Pocket Projector UP-2020	A mini-HDMI port projects HD-quality images directly from Flip Video HD cameras.	$299.99
WowWee Cinemin Swivel	A 90-degree hinge in the device's midsection allows for projection on any surface without the use of a tripod.	$279.99

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

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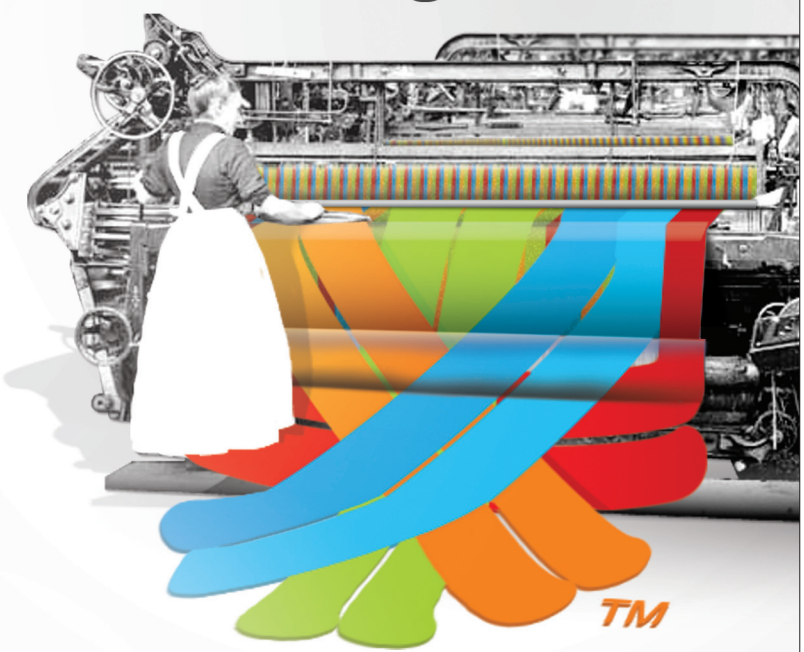

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TECH GETS PHYSICAL

Technology is helping facilities managers achieve significant efficiencies, although not everyone agrees on who should be responsible for what. By Barbara Ravage

ON A SWELTERING DAY in the summer of 2010, a call came in to **Drexel University** (PA) facilities from PJM, which operates the regional power grid where the Philadelphia-based school is located. In accordance with its demand-response agreement with PJM, Drexel had two hours to curtail electrical usage by 1 megawatt—approximately 10 percent of what the campus draws on a peak summer day. Like many large customers, Drexel had committed to shedding load if a power plant tripped offline and threatened to bring down the entire grid.

A facilities team duly fanned out across the campus to flip switches and manually dial back the air-conditioning systems in 37 of the university's buildings. The team didn't have to set foot in three others, which are piloting a smart grid operated by Viridity Energy that helps optimize energy usage and costs. In those buildings, the cutback was automatic.

As colleges push for increased efficiencies, facilities departments nationwide are turning more and more to such high-tech approaches. And nowhere has this trend been more visible than in the realm of energy consumption, where managers hope to extract significant cost savings. The principal purpose of Drexel's Viridity pilot project, for example, is to adjust energy consumption to real-time pricing as Pennsylvania's electric rate deregulation goes into effect.

"With deregulation, all customers become more fully exposed to the real cost of generating electricity," says Bill Taylor, director of mechanical services at Drexel. Typically, rates are at their peak during the day and in the summer, so it makes sense to shift as much consumption as possible to off-peak periods.

Scotty Reifsnyder

Viridity's smart grid technology takes that concept to a higher level, continually transmitting the real-time cost of electricity to each of the three building automation systems (BAS), which have been programmed to respond at a trigger point. For example, if the price of electricity goes above $150 per megawatt, the systems will allow building temperatures to rise a few degrees. "It all happens automatically," says Taylor. "No one's sitting there watching it."

If the price of electricity goes above $150 per megawatt, Drexel University's building automation systems will allow building temperatures to rise a few degrees.

Based on performance so far in the three buildings—the Mack School of Law, the Hagerty Library, and the General Services building, which houses the facilities operations and shops—Drexel plans to hook other campus buildings into the smart grid. "We'll probably double the number of buildings going into the next year, maybe more," Taylor says.

As far as Taylor is concerned, the automated reaction of the three Drexel buildings to the PJM demand-response emergency was just icing on the cake. The university's timely cut in energy consumption, he says, helps "the grid managers get through an emergency without having to interrupt power to customers." PJM pays the school a monthly fee and an additional sum if it complies when an emergency arises. "If you don't comply, you forfeit some or all of the money," Taylor explains.

Georgia Tech is another institution that is reaping energy savings through real-time pricing. An interface between its electrical supplier, Georgia Power, and its Johnson Controls BAS ensures that when the price of electricity goes above a predetermined threshold, the cooling system automatically resets from a comfort range of plus or minus 2 degrees to plus or minus 5 degrees.

An Ounce of Prevention

As important as these energy savings are, however, the facilities department at Georgia Tech believes that it is getting just as much bang for its technology buck in another, less glamorous area of facilities management: preventive maintenance.

Warren Page, director of operations and maintenance at Georgia Tech, knows all too well that it's a lot less expensive to take care of equipment than it is to fix or replace it. "It's just like your car," explains Page. "You have to change the oil, rotate the tires—if you do those kinds of things, then maybe something won't happen to your car. Well, we have thousands of pieces of equipment we do that on." The challenge for Page and all facilities managers is tracking what equipment needs to be serviced when.

Georgia Tech uses AiM, a web-based asset-management system, for preventive maintenance, break-fix maintenance, construction project cost accounting, work-order billing, and utility billing. "We do about 50,000 in-house work orders annually," says Chuck LaFleur, director of information technology at Georgia Tech facilities.

Georgia Tech instituted its preventive maintenance program in October 2001. Full implementation took about a year: It involved cataloging every piece of equipment, entering the data into the AiM database, and associating the preventive maintenance tasks and schedule for each item.

The system generates a work order for scheduled periodic maintenance of a piece of equipment, and outlines all the steps involved. "The work orders are quite detailed: Remove screws, remove fan, inspect belt, that sort of thing," explains Anjum Khan, database administrator for the asset management system. Each work order has a checklist, which the employee assigned to the job ticks off as each step is done. When the task is finished, the work order status is changed from "open" to "complete."

The system allows Page to manage costs, schedules, and the deployment of personnel. "One of our objectives is to be able to control the work we do," he says. "We have that work order, which tells us how many minutes or hours it takes to do each task, so we can establish a schedule for that month and say, 'This is when we're going to do it, this is who is going to do it.' And we can do that in a much more efficient way, as opposed to somebody calling on the phone and saying, 'Rush right over because there's water leaking.'"

One aim of preventive maintenance is to reduce the number of reactive work orders. "Our goal is to have less than 30 percent reactive," says Page. The Georgia Tech team crossed that threshold in 2007, when reactive work orders fell to 29 percent, hitting a low of 22 percent in 2009. Page won't venture a guess about how much has been saved through systematic preventive maintenance. "It's hard to know what didn't happen. What we do know is that we've been able to continue to achieve our goals in spite of budget cuts."

WEB EXTRA

Learn how facilities managers are using data to track a multitude of operations, from energy use to personnel deployment: *campustechnology.com/0211_facilities*

Convergence of IT and Facilities

As the roles of the IT and facilities departments become increasingly intertwined, institutions now are struggling to figure out the best organizational structure to handle the demands of a modern physical plant.

At Georgia Tech, an alliance between facilities and IT has deep historic roots. In the early 1980s, there was no IT department. In fact, there was no network infrastructure at all. Individual departments had their own computer systems, some of them wired to dumb terminals via dedicated phone lines. When it became clear that the ad hoc installations were inade-

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quate, Don Alexander, then an engineer in facilities, stepped in. In 1986, with the help of a BellSouth grant, he assembled an operations team of engineers and technicians to design, install, and configure a fiber-optic network throughout the Atlanta campus. "On the Friday after Thanksgiving in 1988, we turned on Georgia Tech's network in 65 buildings at one time," recalls Alexander, who is retiring this year as manager of facilities engineering.

Two years later, the administrative and academic IT arenas were spun off into a separate Office of Information Technology (OIT), but core IT functions remained in facilities. Today, LaFleur and a staff of four deliver such traditional IT services as e-mail, calendar, contacts, printing, backup and restore, help desk support, and hardware and software procurement and installation to the 500-person facilities department. In addition, they provide a unique set of IT services to some other departments, such as chemical-inventory management for the Office of Environmental Health & Safety and database support for the Office of Radiological Safety.

"It's extremely important that the facilities department have an embedded IT shop," believes LaFleur. "It doesn't necessarily have to provide all of the IT services for facilities like we do, but if [the department is] going to have any kind of work-order or asset-management system, or any resources to help the architects and engineers design, construct, and spec out buildings, the folks who are running that software and providing [technical] help need to be embedded in the facilities organization."

Although facilities has its own IT group at Georgia Tech, the central OIT still works closely with the design and construction side of facilities. At least one OIT representative attends biweekly design review meetings, where each project is specced out. "I think it's a true partnership. We want them to be involved as deeply as they can be," says LaFleur.

Georgia Tech's partnership model is unusual right now. More typically, facilities management and IT act as separate business units, using a customer-provider relationship with interdepartmental billing. IT often regards facilities as providing—or not providing—what it needs to operate; in turn, facilities regards IT as an energy and space hog. And when it comes to tech-heavy solutions, facilities managers tend to use outside consultants and service providers.

Georgia Tech's Alexander thinks this is a missed opportunity, and something he'd like to see change. "I've spoken to a lot of universities about how the physical plant integrates with networking services, and most universities have a very difficult time understanding that."

Silos and Synergies

Indeed, real problems can arise when facilities doesn't have input at the building design and procurement stages. "Hopefully, facilities managers are sitting at the table when construction is planned and designed, but it doesn't always happen," says Judy Marks, director of the National Clearinghouse for Educational Facilities. "Facilities inherits the buildings and then has to manage them."

In an environment as rich in talent as the nation's universities and colleges, it's counterproductive for any department to view itself as a self-contained silo. At Drexel, for example, the idea for the Viridity Energy project originated in the College of Engineering's department of electrical engineering. Chika Nwankpa, professor of electrical and computer engineering and director of Drexel's Center for Electric Power Engineering, is an expert on the fusion of information-based technologies with the electric energy infrastructure. He worked with Viridity Energy on the basic project outline, and then brought it to facilities to define and refine the pilot.

Cooperation between the IT and facilities departments also saved the day at the **College of Charleston** (SC), when the building-control system in the brand-new, 125,000-square-foot science center could not communicate with the central BAS in the physical plant department. "We rely heavily on IT support for our building automation system because the control systems at the field level all have to transmit the data over the Ethernet to the mainframe collection point back at the physical plant," says Tom Fressilli, an associate engineer for energy management.

When the building-control system in the College of Charleston's brand-new science center could not communicate with the central BAS, IT saved the day by connecting a single laptop to collect the data.

In this case, however, the control system in the science center and the mainframe did not speak the same language, and, according to Fressilli, neither the vendor nor the service contractor "was very interested in getting together after the fact and making it work." Fortunately, the IT department was able to design a workaround, establishing connectivity through a single laptop to collect the data.

How institutions structure the relationship between IT and facilities varies from college to college, but one thing is clear: Gone is the nuts-and-bolts image of the old facilities department. Today's facilities managers must be as knowledgeable about the flow of systems data as they are about the flow of water on campus. "The biggest change," says Georgia Tech's Page, "is we now have to figure out what data is important because we've got so much of it at our fingertips." **CT**

Barbara Ravage *is a freelance writer and editor who lives on Cape Cod, MA.*

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SETTING UP A CFO TRUST FUND

Christopher Zacharow

Forging a bond with your director of finance will reap rewards for your institution—and your department.

By Dian Schaffhauser

ROBERT "CHIP" GERMAN distinctly remembers how intimidated he felt when the **Millersville University** (PA) CFO interviewed him for the school's top IT job in 2008. Over lunch, Roger Bruszewski, the vice president of finance and administration, looked across the table at him and asked, "Do you play golf?" German, who wouldn't know a Big Bertha if it clubbed him in the head, thought, "I'm in trouble now."

Despite his lack of plaid pants, German still got the job as VP of information resources. Golf, it turns out, was simply representative of the kind of easy camaraderie that the CFO and the rest of the university cabinet fostered across the board. Three years later, listening to German and Bruszewski talk about the CIO-CFO relationship is like tuning in as two longtime friends recount their college days together—with continual interruptions, friendly teasing, and outward expressions of mutual respect.

While it would be naïve to think that every CIO can achieve such a rapport with his CFO, understanding the importance of a solid relationship with the head of finance is critical to success, both for the IT department and the institution as a whole. Never has this been truer than in today's bleak economy, as CFOs become increasingly cautious about initiatives that involve significant expense, yet information technology can help achieve efficiencies that will improve the bottom line.

The good news is that forging a productive relationship with the CFO doesn't require speaking in accounting jargon (although having an understanding of finance helps); it doesn't depend on continually proving your technology prowess; it doesn't even require you to learn golf. What it does call for is building a bond of trust and honesty with your counterpart—or superior—sometimes at the expense of your own ego.

Look Beyond IT

For Bruszewski and German, working well together begins with this fundamental truth: They're officers of the university first and heads of specific divisions second. "We have to be worried about all aspects of the campus," Bruszewski explains. "For instance, we're in the process of having a conversation about transforming the institution over the next 10 years. We've probably had more conversations on that topic in the last three months than we've had on finance and IT. We usually don't talk about the technology; we talk about the strategic impact on the institution."

It doesn't hurt that Bruszewski was formerly a CIO, and German himself has a background as a chief of staff at the **University of Virginia**. By holding positions outside their current niches, they gained exposure to institution-wide issues. So vital does German consider the value of such cross-department experience that he actively seeks opportunities for his own staff members to work on university-wide projects. "That gives them the opportunity to develop empathy for all the other areas of the institution early on and repeatedly," he notes. "It's a real success factor for how they will build relationships in the institution going forward."

Moving up the traditional career ladder within a single, specialized area can lead to narrow-mindedness, German believes. "The best diagnostic indicator of that trap is when somebody blames some other section of the university for something they're not able to do," he notes. "People who have had university-wide experience generally recognize that it's a shared responsibility. Pointing fingers of blame is usually covering up some other problem."

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Working off the Same Playbook

North Shore Community College (MA) decided that the best way to avoid departmental myopia was to have everyone use the same playbook. The school doesn't have a separate technology plan—IT is simply part of the college's overall strategic plan.

It's an approach that has worked well for Janice Forsstrom, North Shore's VP of administration and finance, and CIO Gary Ham. When technology is part of a solution that will move the college closer to achieving its objectives, Forsstrom pushes it within the president's cabinet, while Ham sells it within the IT governance committee, which has representation among multiple campus constituencies.

"Gary is excellent with really helping me to understand the technical details and how a particular technology is going to make a change," says Forsstrom. "So it's not technology for its own sake, but how it all fits together."

Ham has helped in that effort by bringing an understanding of financial issues to discussions. "He's not a finance person as such," says Forsstrom, "but he understands the big picture and understands that he has to help me make the case for the investment."

Ham is actually a hired gun, employed

STAND BY ME

ACCORDING TO NORTH SHORE COMMUNITY COLLEGE (MA) CIO Gary Ham and VP of Finance Janice Forsstrom, ensuring a successful relationship between the CFO and CIO calls for each partner to deliver specific forms of support.

The CIO needs from the CFO:

- High-level understanding of core technologies and underlying complexities to set realistic expectations and discuss strategic options
- Assistance in gaining buy-in for technology that meets strategic objectives, to assure wide adoption
- Help in managing expectations, especially for projects that address long-term objectives
- Approval of funding for proposed solutions, as well as documented analysis of service improvements, investment returned, etc.
- Acceptance as a strategic business partner and collaborator

The CFO needs from the CIO:

- An institutional perspective that directs technology decisions toward strategic priorities
- A complete analysis of new initiatives that encompasses costs, ROI, return on value, options, issues, and potential pitfalls
- A proactive approach to communications with others in the institution and use of governance structures to gain consensus
- Realistic assessment of current IT skills and steps to filling the skills gap
- A business and entrepreneurial mentality

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by the college from SunGard Higher Education's Technology Management Services (see "Outsourcing the CIO," at right). His job is not a short-term position; he's been in his current role at North Shore for 12 years—even longer than Forsstrom has been CFO.

The relationship that Forsstrom and Ham forged at North Shore began when the institution needed to do a major overhaul of its administrative systems, including how students registered and paid for classes, as well as the implementation of a campus portal and web-based student self-services. It was Ham who came up with the idea of making the pilot program "like Disneyland," recalls Forsstrom, where students move as groups through a quick training process to learn how to register via self-service. The pilot was so successful, Ham says, "we really made that official for the next semester." Sixty percent of students used the self-service route after it had officially gone live.

Battle of the Budget

If the CIO and CFO aren't on the same page, nothing exposes that rift more quickly than budget time. Instead of the CIO and CFO working together toward a shared vision, their interactions quickly degenerate into nothing but sparring over dollars and cents. "I've seen IT officers do this quite a bit," says Millersville's German. "They immediately get into a defensive 'I'm-going-to-protect-my-turf-at-all-costs-possible' posture. They do so by creating elaborate justifications on ROI and value propositions and that kind of stuff."

WEBEXTRAS

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What that looks like to the CFO, adds Bruszewski, is overselling: "The CIO comes with an idea. In order to get support from the CFO, he oversells the concept. He says, 'I can do it for this much money. I can do it in this short time. We're going to see this return on investment.' As CFO, I don't even ask for ROI anymore. [Projects] never come out the way you think they're going to come out. Then, all of a sudden, you're 20 percent over budget, 30 percent over time. All the offices are frustrated. And the trust factor goes out the window."

The reverse side of the trust problem occurs when a CIO comes up with a good plan and the CFO underfunds it because "he thinks you don't need that much," says Bruszewski.

Coordinating Strategic Planning

The solution, both Millersville officials agree, is to do their strategic thinking together. All too often, says Bruszewski, the CIO and CFO do their planning separately "and then they try to bring their ideas together, and it's really hard. The difference with Chip and me is that we try to do the tactics and strategies early on so we have no surprises."

For a recent project, the two men and members of their staffs spent a year reviewing all printing and copying on campus. As a result of that joint analysis, the university changed how its print shop operated, how printing was managed in student labs, and even what copiers were used. "We've actually yielded a better return on investment than we thought," says Bruszewski.

The success of projects such as these, he adds, stems "from having mutual respect for each other—not setting your sights too high or too low, and working through the difficult issues. What's happened in other institutions where I've been is that, all of a sudden, the project starts going bad. Rather than the two individuals working it out, one tries to either hide or change it or maneuver it in such a way that it usually just ends up going wrong."

"We don't hide stuff from each other," says German. "Roger is a very open leader. He will always tell me everything he can tell me. There are some limits on that and I respect those limits. But he doesn't withhold things. He just gives me the whole story. And I try to do the same thing with him."

Not everything is sunshine and daffodils, though. Disagreements do surface. The vice presidents recently argued in a cabinet meeting over what to do with social media and the university's web presence. "We both agree on the end," says Bruszewski. "We just can't agree on how to get there yet. But it's not about him losing and me winning. We'll figure it out."

It Takes Two to Tango

One lesson that all the interviewees stress is that a partnership requires two players. Even if the CIO is doing everything possible to forge a productive relationship, it will all come to naught if the CFO is solely interested in the bottom line.

At North Shore, Ham credits much of his success to Forsstrom's willingness to take the time to understand the nuances of complex technology projects. "I worked for a CFO at another college and we had a completely different relationship," explains Ham. "That person wasn't willing to spend the time to look past the dollars and cents. Jan's very good at listening to the obstacles and really understanding the issues."

Forsstrom's willingness to look beyond the immediate fiscal budget served North Shore well when all of the colleges in the Massachusetts Department of Higher Education had to address new PCI mandates, and many institutions needed to move to external compa-

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nies for their internal payment gateways. Three companies were in the running. The obvious choice was the one that would cost the least, even though it didn't fully address new service improvements, including single sign-on. Ham and a small team, including reps from student accounts and financial aid, met with each vendor. Then they sat down and analyzed all costs associated with running the business.

"Lo and behold," says Ham, "the solution that was best for us was from a company whose costs at face value in year one were much higher—$30,000 more than the other solutions." That choice resulted in four new services, such as single sign-on, elimination of paper bills, and the addition of third-party payment functionality. And, from a fiscal standpoint, costs were actually less after year two.

"Gary is very, very good at homing in on what is a good value for the business of the institution, which is education, and not just saving money," Forsstrom says. "It's an investment for the future of our business, which is teaching and learning."

Partnering to Ease the Pain

Sometimes, though, the CFO has no choice but to take out the knife and start cutting. It is at times like these that an institution is well served by a CIO and CFO that can work in partnership. At North Shore, for example, Ham worked with Forsstrom to develop an institutional survey to solicit ideas from all over the campus for how to increase revenues, achieve cost savings, and offer services across departments to help each other.

A partnership requires two players. Even if the CIO is doing everything possible to forge a productive relationship, it will all come to naught if the CFO is solely interested in the bottom line.

And then, when hiring was frozen and IT lost its director of networking, among other positions, Ham didn't complain. He simply stepped into that particular role and reorganized other jobs to continue delivering the services needed by the college. "It has been a difficult time," Forsstrom points out. "And they have done a remarkable job."

It's a similar story at Millersville University. During the most recent economic downturn, when some operational budgets were cut by 10 percent and equipment budgets by 50 percent, both Bruszewski and German exceeded the cuts needed within their specific organizations to help meet the university's overall goals. "We were both deeply concerned about how we were spending our equipment budget to make sure we weren't reducing the quality of our academic instruction. I think that's what we worried about more than anything," says Bruszewski.

Looking beyond his own department, the financial VP expressed his worry about German's ability to maintain delivery of services, especially since IT was losing some positions. "In one particular case dealing with my office, [we] agreed to pick up some of the work, so he could move resources to other places," explains Bruszewski.

For his part, German says that earlier in his career he would have fought some of the cuts that he proposed to Bruszewski this time around. His change in attitude, he says, "comes from having a wider institutional view and recognizing that, while it may be painful for me, it would be more painful for it to come from other areas. So it's time for me to put up."

"It's about being a team," adds Bruszewski.

Check Your Ego at the Door

As the rapport between dynamic duos such as German and Bruszewski or Ham and Forsstrom demonstrates, a culture of trust proves its value in times ordinary and difficult.

"If a CIO is defining success at the expense of the CFO or any other officer of the institution, that's a recipe for a failed relationship," explains Millersville's German. "But if that person defines success as, 'I'm doubly successful when the CFO is successful,' then he's just indicated an investment in the CFO's success that's going to be a core element of the trust between them."

That sense of trust permeates the entire university cabinet, according to Bruszewski. "We're all seasoned," he says. "My ego went a long time ago. I've been doing this so long I don't have an ego anymore."

Ultimately, however, specific individuals must define the relationship they have with each other. In the case of the CIO working with or for the CFO, common humanity will trump even the most dazzling technology every time.

"I'm the CFO," North Shore's Forsstrom concludes. "The demands are reduced funding, increased accountability, better performance, higher expectations for customer service, being competitive, looking at costs, and looking at better service. I look to the IT department to help with all of that. IT has come through. Why would I not be supportive?" **CT**

***Dian Schaffhauser** is a senior contributing editor of this magazine and contributes regularly to* CampusTechnology.com.

OUTSOURCING THE CIO

SMALLER COLLEGES OFTEN turn to CIO outsourcing in situations where they can't afford to hire the level of talent they want. According to SunGard Higher Education, the CIOs the company places at institutions go through rigorous qualification steps, including testing, to ensure they're the right fit. In the online-only feature, "College CIO-for-Hire," *CT* explores the advantages of working with an outsourced CIO. *campustechnology.com/0211_CIO*

University researchers are using e-procurement systems to achieve their goals swiftly and efficiently.

ONE-STOP SHOPPING

By Mary Grush

HIGHER EDUCATION INSTITUTIONS are competing harder than ever for recognition as top colleges and universities. Nowhere does that competition play out more keenly than in the field of research, where successful researchers and programs can garner enormous prestige for an institution. For administrators interested in burnishing the reputations of their institutions further, the goal is simple: Create support systems that make it possible for their star researchers to focus exclusively on their work—and to produce results quickly.

E-procurement systems help put that goal within reach. While e-procurement already plays a strategic role throughout higher education—providing greater oversight on spending, maximizing the benefits of on-contract ordering, and streamlining procedures—its impact in the realm of research is particularly significant.

A Rapid Race to Research

"As an institution, we compete on the basis of speed," says John Riley, executive director of purchasing and business services at **Arizona State University**, which moved to e-procurement six years ago. ASU ranks as a top-tier research university despite the fact that its endowment cannot compare to those of other prestigious universities that have existed for hundreds of years. "We can't just 'buy' great researchers," says Riley, "but we can attract those researchers if they can get their labs up and running faster, if they can get their research done faster, and if they think they have a better chance of making that big breakthrough sooner."

Those big breakthroughs rarely occur while researchers are wading through stacks of bureaucratic paperwork. "Researchers are basically interested in doing research," says John Mayes, AVP and chief procurement officer at **Yale University** (CT), which turned to e-procurement in 2004. "They're finding a cure for cancer, they're finding a cure for diabetes—they're passionate about their research and they don't want to spend time on any administrative task that they can avoid. One of the nice things about the e-procurement solution is that it is *really* fast."

ASU's Riley agrees. "Researchers would trade money for time any day of the week," he says. "What I try to do is make sure they don't have to make that choice."

When researchers need to purchase something, it is often critical for the research process and may even be needed overnight. With an e-procurement system like Yale's, for example, it takes just minutes from the time the order is submitted to when it's received by the supplier, and there are shipping controls and tracking in some cases. Yale also has internal stockrooms right on campus from which researchers can order supplies.

Eliminating ordering mistakes saves time, too. "An e-procurement system allows us to distribute contract information right to the desktop," says Riley. "Not only can the researchers order things faster, they can order the right things. They can look at images to identify what they need."

Preemptive Procurement

A lot of time can also be lost at the very beginning of a project. Most research projects depend on grants or funding of some sort. Not surprisingly, many universities and colleges don't allow researchers to begin the procurement process until the funding is secure. "I've had researchers come in with grant

A CELL-ING POINT FOR E-PROCUREMENT

JAKOB WATERBORG'S RESEARCH into cell biology has spanned more than 30 years, 23 of which have been spent in his current position at the **University of Missouri-Kansas City.** Along with his role as a principal investigator, he's also a tenured associate professor in the School of Biological Sciences at UMKC.

Waterborg's research lab investigates the regulation of gene expression, specifically studying histones, the packaging proteins of the genes. "We are looking all the time at very basic, fundamental science questions," says Waterborg. Two major processes in particular hold his attention: first, how cells duplicate their DNA and then repackage it with new protein; and second, transcription—specifically the mechanism of loosening tightly packed DNA in nucleic cells to get the encoded information out, to make protein.

"For the *moment*—the last 15 years," Waterborg says, his experiments are plant- and fungi-based. Such focus over a long period has put him on the cutting edge of research in the field, and has brought international acclaim both to his program and his university.

But just because such research takes years, doesn't mean a supply order should. Waterborg's lab is loaded with highly sensitive supplies and experimental material, all of it maintained like clockwork and personally overseen by him. Almost 25 years ago, he made a choice to run a smaller lab where he could keep his hands directly on the research—rather than becoming more of a research administrator in a larger lab.

"I bring a handful of people in to work with me, who can work with the genes...while I complement that with expertise that I've developed over my career in working with the packaging proteins," says Waterborg. "Keeping that distinction, it's possible for me to stay at the head of my field and not get taken over by my own lab to become a money-generating machine."

Working in a small lab by choice, Waterborg does his own ordering—everything from chemical supplies and disposable plasticware from companies such as Fisher Scientific or Sigma-Aldrich, to more expensive laboratory equipment such as his $9,000-plus sub-zero refrigeration unit. And Waterborg purchases 75 percent of all his supplies and equipment through UMKC's self-service e-procurement system.

Waterborg has been using UMKC's e-procurement system since the university launched it more than four years ago. He appreciates the time savings, along with his ability to oversee all purchases for his lab. Before e-procurement, a traditional paper-based purchase took Waterborg anywhere from 30 minutes to an hour. With UMKC's e-procurement system—SciQuest with PeopleSoft integration—the professor estimates that a similar order may take five to 10 minutes. "That's probably a 5x to 10x factor of time saved," notes Waterborg. "Rarely is any follow-up required." All of which means that he can spend the bulk of his time on pure research.

2010 WINNER: Western Carolina University (from left to right): Beth Lofquist, Craig Fowler, and Anna McFadden

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requests, but their money is not here yet—their project isn't even funded yet," explains Riley. "But they want to go through the procurement process; they want us to line up the contracts so that as soon as the money is available they can pay the contractor, get what they need, and get a running start."

Increasingly, institutions with e-procurement systems are jettisoning the requirement to have funded requisitions before beginning the procurement process. By letting suppliers know that orders are being placed on the basis of anticipated funding, the procurement department can get much of the work done, ready to set in motion once the grant comes through.

"A more traditional approach would have been for the procurement department to say, 'If you don't have funding yet, you don't need procurement,'" says Riley. "But that's really not our mission. Our mission is to get researchers what they need. We do all this to speed everything up."

"Researchers are basically interested in doing research. They're finding a cure for cancer, they're finding a cure for diabetes—they don't want to spend time on any administrative task that they can avoid."

—John Mayes, Yale University

Saving Money to Support Research

For research programs, the second great advantage of an e-procurement system is cost savings. Indeed, e-procurement systems are known for cutting the cost per transaction significantly, as well as for providing users with the pricing advantages of spending on contract with vendors.

While that's all good news, Riley cautions that it's important for procurement departments to explain what these cost savings mean to researchers. "In the procurement department we never say to researchers, 'We are trying to save people money,'" says Riley. "Researchers hate the sound of that, because they think that if there is a savings, somebody will try to capture it." Instead, Riley focuses researchers on their ability to get more value from their dollars, perhaps in the form of additional staff who can work directly on research.

Integrating Systems and Services

At many institutions, red tape proliferates in direct proportion to the number of approvals required up the organizational ladder. Procurement is no different. "You really need to think about pushing this function down to the lowest level you can reach, because that's where things usually get ordered," says Tom Kaloupek, **Virginia Tech**'s director of materials management.

A big part of the success of e-procurement in research programs at Virginia Tech—which, like the other schools in this article, uses procurement software from SciQuest—is an organizational structure that allows lab managers and graduate students access to the system, and gives the principal investigator the option to approve purchases in real time. For four years now, the university's e-procurement system has been fully integrated on the back end with its SunGard Banner ERP system: With all the business rules in place, the PI's research budget is instantaneously updated and accurate.

E-PROCUREMENT VENDORS

BEYOND THE E-PROCUREMENT FUNCTIONS offered by larger ERP vendors, you'll find many other vendors in the e-procurement space—but they vary greatly by primary market served and by functional offerings. In the education market, checking the experience of peer institutions is a good first step in looking for a solution that's right for your college or university. Below is a smattering of the available options.

Ariba: Cloud-based finance management. *ariba.com*

B-pack: E-procurement automation. *b-pack.com*

Basware: E-procurement and financial management. *basware.com*

Bellwether Software: Electronic purchasing software. *bellwethercorp.com*

Coupa Express: Open source e-procurement project sponsored by Coupa Software. *coupa.org*

HedgeHog: Sourcing and e-procurement. *hedgehog.com*

Ivalua: Sourcing and spend management. *ivalua.com*

Ketera: Source to spend management, recently acquired by Rearden Commerce. *ketera.com*

Proactis: E-procurement and spend management. *proactis.com*

SciQuest: Sourcing, catalog management, and e-procurement. *sciquest.com*

The benefits have included not only time savings but also the elimination of paper-based shadow systems that had been used to reconcile budgets—some of which caused more confusion than clarity. Against the current backdrop of highly constrained research budgets, says Kaloupek, the e-procurement system is especially empowering.

What started out at Virginia Tech as a system intended for external vendors has proved equally valuable in the trading of services on campus. "We have lots of internal service areas—such as DNA sequencing—where we have a cost center," explains Wendell Vest, associate controller at Virginia Tech, "and there are numerous sponsored projects that might need such a service from another internal department." The university can set up its internal departments as vendors in the e-procurement system, so research programs can easily purchase services from qualified departments within the university. Using the workflow in its e-procurement system, Virginia Tech has eliminated the cumbersome paper approval process that used to accompany these exchanges.

So successful has Virginia Tech's implementation been that the procurement department has extended integrated e-procurement to a diverse range of research programs, both on and off campus. A unique example is the Unmanned Systems Lab, whose research into autonomous unmanned vehicles—land-based and airborne—requires an off-campus location. But the lab is by no means remote from the highest level of university procurement services. In fact, the procurement department welcomes research users anywhere in the university community. "At Virginia Tech, our research component has grown immensely," says Kaloupek. "We would be very hard-pressed to provide the kind of service researchers are looking for in procurement without the e-procurement system."

Keep an Eye on the Prize

For Riley, his goal at ASU is to offer researchers a delivery mechanism that will get them what they want, under contract, at a good price, and much faster than any other way they could possibly do it. That's what most other administrators want, too.

And if all goes according to plan, the researchers end up winning the Nobel Prize. Just don't expect the head of procurement to be invited onto the podium in Stockholm. "You've never heard a Nobel Prize winner say, 'I owe it all to my friends in purchasing,'" quips Riley. At the end of the day, though, everybody—including the institution—wins. **CT**

Mary Grush *is editor and conference program director for* Campus Technology; *she also writes the* C-Level View *newsletter for* CampusTechnology.com.

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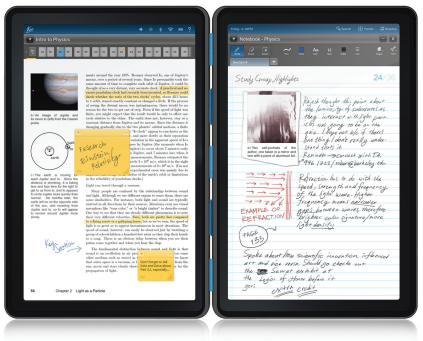

Kno has begun shipping the first generation of the *Kno* tablet, designed specifically for higher education. The device is available with one or two 14.1-inch, 1,440 x 900-pixel touchscreens and can display full-scale textbooks, videos, and other multimedia. Other features include note-taking, educational apps, web browsing, and content sharing. Kno is also operating an electronic textbook store featuring "tens of thousands of textbooks from most of the major publishers, with new books being added regularly," according to a company statement. The tablets made their formal debut last year and went into beta testing with higher education students this past fall using software from education publishers Cengage Learning, McGraw-Hill Education, Pearson, and Wiley. Price: $599 for the single-screen model and $899 for the dual-screen. *kno.com*

Pico Projector Screen

Da-Lite has expanded its portable line of screens to include a new tabletop *Pico Screen*. Created with pico projectors in mind, the lightweight, portable screen comes standard with Video Spectra 1.5 gain screen material and provides a 30-inch diagonal viewing area. Setup is as simple as removing the screen from the carrying case, pulling the two halves of the screen case apart, and placing the screen on a table or stand; there are no latches or feet to deal with. In the closed position, the device is 19 inches long and weighs 5 pounds. MSRP: $98. *da-lite.com*

Enhancements for HR

SunGard Higher Education has released *Banner Human Resources v8.4*, featuring several enhancements driven by customer input and collaboration through the SunGard Higher Education Community Source Initiative. Through the initiative, the **Texas Tech University System** helped develop vendor-supported integration between the Salary Planner and Budget Development modules within *Banner HR*. A community source submission from the **University of Illinois** provided a new employee summary view form, and a contribution from **Virginia Tech** provided a veteran's category self-service update page. Other new features include regulatory enhancements and new hire/life event enrollment via self-service. Contact vendor for pricing. *sungardhe.com* **CT**

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Trendspotter

Turkle's 'Technology as the Architect of Self' By Mary Grush

Sherry Turkle, professor at the **Massachusetts Institute of Technology** and founder and current director of the MIT Initiative on Technology and Self, presented the opening keynote at Campus Technology in Boston, July 2010: "Technology as the Architect of Self: Implications for Higher Education." *CT* recently sat down with Turkle to find out how technology is shaping today's college students.

CAMPUS TECHNOLOGY: What do you mean when you talk about "technology as the architect of self"?

SHERRY TURKLE: Paraphrasing Winston Churchill (who said, "We shape our buildings; thereafter they shape us…")—I say, we make our technology, and then our technology makes and shapes us. And that subjective side to what technology is about has been my touchstone for a 30-year career in thinking about information technology and people. My perspective is looking not at what technology does for us, but what it does *to* us.

CT: To what extent have you included college-age students in your work and why?

ST: I've looked at students as they are coming into college, and some college-age students, so here I'll focus on the 17- and 18-year-olds… because these young people who have grown up with contemporary information technology—with laptops and cell phones—are a window onto our future and what higher education needs to be thinking about.

CT: What is one of the most important things higher education needs to be aware of, when it comes to how this generation of students responds to technology…or how technology may be shaping them?

ST: The cultural meaning of "transparency" has changed. We used to say that a technology was transparent if we could open the box and look inside…to see what was under the hood. But now, the Macintosh meaning of transparency is if you can double-click on it and make it work *without* knowing how it works. This means students just don't know what the technology they are using can or cannot do. And I think that has implications both for how they develop a sense of empowerment as individuals, and how they develop a sense of empowerment as citizens who have to use the technology in socially responsible ways.

CT: So students in general are taking technology at face value and not really understanding how it works. What is one of the biggest problem areas resulting from this? There must be many, but just pick one.

ST: Privacy. Information technology confronts this generation and educators with the challenge of asking what kind of privacy regime they will be comfortable with. The standard conversation [you'll hear in the media] about privacy is that "students don't care." In my interviews with students, I find something rather different: They care, but they are absolutely clueless.

TURKLE at CT 2010 in Boston

Photo by Mary Grush

They don't know what's legal; they don't know what they are entitled to want. And they are terrified of losing their Facebook, because that's where their lives are. So it's not that they don't *care*; it's that they don't *know* and they feel politically impotent.

CT: What is the responsibility of educational institutions to better inform students about this and other issues related to technology? Is this lack of knowledge and feeling of powerlessness something that required computer literacy classes could tackle?

ST: Computer literacy classes should focus on shaping empowered citizens in the digital age. This includes teaching students about privacy and their rights to it. Computer literacy is an opportunity for educators to rethink what technological literacy now needs to be. CT

Editor's note: Turkle's latest book, Alone Together: Why We Expect More From Technology and Less From Each Other *(*alonetogetherbook.com*), was published in January by Basic Books.*

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