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CAMPUS TECHNOLOGY
Empowering the World of Higher Education
December 2011

WOMEN IN IT

Why does IT remain a male-dominated field, and how can more women find success in it? p. 34

PLUS THE BUSINESS CASE FOR THE CLOUD p. 22

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Features

What TCO Really Means

How we can better serve the legacy of Steve Jobs.

The first time I saw an Apple computer was in 1982. I was temping for a Minneapolis agency that sent me to a small widget factory. The owner wanted me to input inventory numbers into a database on his brand-new personal computer, about which he was giddy with excitement. I thought it was pretty magical myself.

The next time I saw an Apple was in 1986, when I went to work as an editor for an educational software publisher. This time it was a Macintosh and I was truly blown away. I have been the proud owner of many Apple computing devices since then, and I have been a continual admirer of the company's human interface aesthetic.

So it was with great interest and, nine days after Steve Jobs' death, a heavy heart that I attended Mike Daisey's one-man show, "The Agony and the Ecstasy of Steve Jobs," at the Public Theater in New York. Some of you may have seen the show; if you haven't, here it is in a nutshell: Daisey speaks to his lifelong love affair with all things Apple and how Steve Jobs was a personal hero for him.

But when Daisey visits the factory in Shenzhen, China, where Apple products are manufactured, his infatuation with pretty devices turns to disillusionment. There he encounters 13-year-old children who work 14- to 18-hour days; people in their 20s who have permanent hand deformities from executing the same repetitive motion day after day; and reports of daily suicides at the factory that are ultimately suppressed in the Chinese press (and largely ignored by the American press).

It was an uncomfortable experience, sitting in that audience and learning at what cost I enjoy my smartphone, my MacBook Air, and all my other electronic doodads. Indeed, Daisey makes the point that this is not an Apple problem; virtually all electronic devices are manufactured in Shenzhen, or places very much like it, under very similar working conditions. The problem lies with our voracious consumer culture that feeds the system.

I'm not suggesting we should stop buying electronics, but there are ways we can assert our power as consumers. We can contact Tim Cook (*tcook@apple.com*), Apple's new CEO, to urge him to allow independent, outside verification of working conditions in Apple factories. Your institution can get involved with Students and Scholars Against Corporate Misbehavior (*sacom.hk*), a Hong Kong-based human rights organization for humane working conditions in China. Several US university professors are on its advisory board. Find out how your campus can support its work. Also check out *makeITfair.org.*

Ultimately, we (who are part of an education community) need to educate ourselves and others to understand the true "total cost of ownership" of our computing devices: not just the cost to our pocketbooks, but the human cost to the people who make them for us. **CT**

—Therese Mageau, Editorial Director
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REACHING THE STAFF
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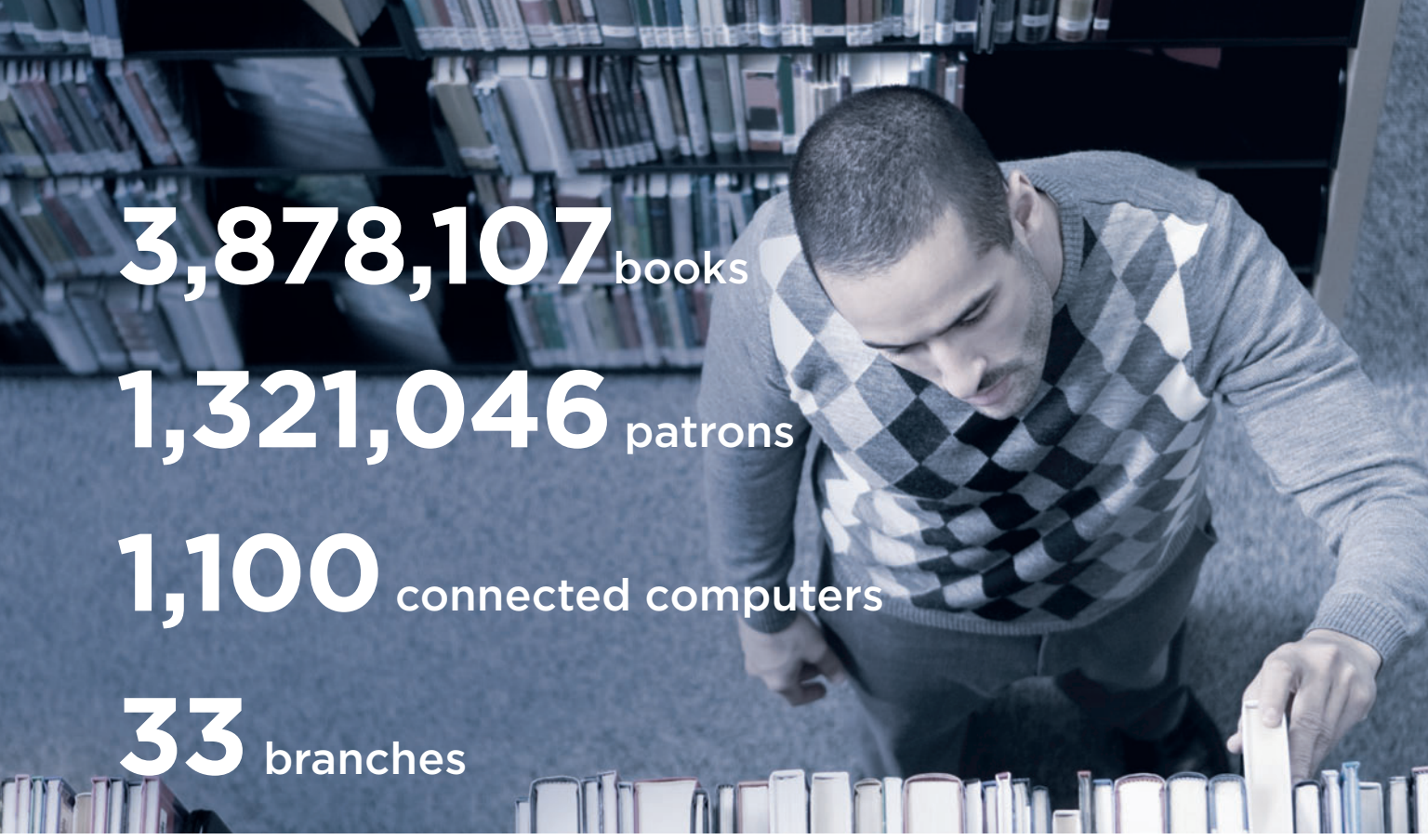

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The Moodle "Top 10": The Benefits of an Enterprise Open Source E-Learning Platform

How to leverage Moodle to fulfill learning requirements and support your institution's academic mission.

Getting the Most Out of Your LMS

Learn how **Orangeburg-Calhoun Technical College** (SC) is maximizing the benefits and functionality of its cloud-based LMS.

Making the Move to a Digital Campus

Higher education CIOs and experts discuss how to tackle the challenges of moving to a digital textbook environment.

Storage Virtualization and Automated Tiered Storage Provide Backbone for Advanced Education

How **American University** (DC) reduced its carbon footprint, cut energy costs, and built a 21st century data center with automated tiered storage and virtualization.

How Innovative Colleges Are Using Enterprise Content Management in the Advancement Office

Experts from the **University of North Carolina Wilmington** share how their advancement office reduced paper consumption, processed gifts faster, and streamlined complicated workflows with enterprise content management.

How to Manage Growing Digital Content Needs Through Virtualization

Educators and IT staff are using virtualization to tackle digital content challenges on computing devices, in applications, and at the server level.

Q&A

Leading Open Source in the Community College

Lee Belarmino, the recently retired vice president of IT at **San Joaquin Delta College** (CA), discusses the institution's move to the open source Kuali Financial System.

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Events Calendar

Jan 24 - 26
School & College Building Expo
scbexpo.com
Orlando, FL

Jan 25 - 28
Association of American Colleges and Universities
2012 AAC&U Annual Meeting
aacu.org/meetings/annualmeeting/index.cfm
Washington, DC

Feb 12 - 17
The Data Warehousing Institute
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Online Learning Tips

*In the November story "6 Easy Steps to Online Success" (*campustechnology.com/articles/2011/10/24/6-easy-steps-to-online-success.aspx*), **West Texas A&M** professor Richard Rose shared his recipe for developing a successful online learning program.*

One of the things I have been trying to convince faculty to do is e-mail students about the course or just inform them when the course will be made available for logins. It is a courtesy e-mail to students that says: 1) thanks for enrolling in the course; 2) welcome to the course; and 3) the course will be made available soon. The course can be made available with just the syllabus at first, and then the instructor can add pieces of content as needed, and timeline them for access.

Robert
Phoenix
Comment posted on *campustechnology.com*

With so many academics creating educational content to use in their classes, a curation process needs to be implemented. For example, Utubersity.com presents the best educational videos available on YouTube in an organized way. They are classified and tagged in a way that enables people to find these materials more easily and efficiently, without wasting time browsing through pages of irrelevant search results. The website also recommends related videos, Wikipedia content, and so on.

Ifp
Comment posted on *campustechnology.com*

Defining Digital Natives

*CT's October feature "Will the Real Digital Native Please Stand Up?" (*campustechnology.com/articles/2011/10/01/will-the-real-digital-native-please-stand-up.aspx*) questioned the relevance of educational thought leader Marc Prensky's definition of the tech-savvy "digital native."*

The term digital native and what it implies is vastly complex, and I think Marc Prensky has done more damage than good by categorizing age as a defining factor of being a digital native. "Native" implies you are already part of the territory (taking a cue from geography and colonial studies). But in the world of digital technology, the youngsters who started using the digital tools of the '80s and '90s had to depend upon the creators and originators of those tools—computer designers, hardware developers, tech infrastructure developers—to inhabit that digital-native land. This would mean that those technologists were in fact the original inhabitants, and those born in the '80s "immigrated" to these lands.

We also have a largely distorted perception of the characteristics of this digital native: young for sure, but also white, mostly male, always connected to his gadgets, living in his insular online world in the Global North. The reality is far from this. We have digital natives from across the socioeconomic spectrum, across geopolitically sensitive areas, engaging in ICT4D [Information and Communication Technologies for Development], academic research, social change, citizen journalism, or just making a difference in their personal spaces. What we need is more documented case studies of this vast spectrum of digital natives and to tear apart the outdated Prensky-ish notion of who can claim ownership of this tag.

Nilofar Ansher
India
Comment posted on *campustechnology.com*

I second Nilofar Ansher's comments. As a person who has been immersed in educational technology for longer than most current college students have been alive, I'm confused about whether/how the term "digital native" applies to me. I'm more technologically facile than the digital natives in many ways, but not in all ways. To further add to the picture, a recent *New York Times* article described how employees of eBay, Google, Apple, Yahoo, and HP are sending their kids to a Waldorf school, where technology is typically eschewed (*nytimes.com/2011/10/23/technology/at-waldorf-school-in-silicon-valley-technology-can-wait.html*).

Brian Reid
Comment posted on *campustechnology.com*

Understanding E-Portfolios

*In "A Survey of the Electronic Portfolio Market Sector: Analysis and Surprising Trends" (*campustechnology.com/articles/2011/10/12/a-survey-of-the-electronic-portfolio-market-sector.aspx*), in CT's C-Level View newsletter, columnist Trent Batson provided an overview of today's e-portfolio market.*

I think portfolios are so 10 years ago. I began teaching a portfolio course in 1994 when I taught at **Indiana University Bloomington**. I have personally supervised about 1,000 undergraduate student portfolios since that first course. After about 10 years of supervising a portfolio course where students had a mandatory capstone experience (there were other options beyond portfolios), we are moving away from them. Although I have many students who credit their portfolios as instrumental in getting a job offer, I would say 25 percent of students did the portfolio simply to fulfill their graduation requirements. As evidence of this, many unclaimed print and electronic portfolios sit in my office.

Here is what I have learned: First, making portfolios mandatory creates a demand to produce an artifact that may or may not be genuine. Second, some portfolio companies are expensive services that students cannot easily continue to develop as a lifetime portfolio project at a reasonable cost. Many students lose access to their portfolios a few months after graduation. Third, many students are never taught to create portfolios that are organized by their strongest competencies or qualities. I have seen portfolios from other departments on my own campus that are little more than a collection of writing samples organized by rigid templates (a cookie-cutter approach). Finally, few portfolio companies provide students with multiple formats for their work.

Online portfolios can be great, but slowness of the internet in prime work hours can slow media presentations to a crawl.

It is my opinion that much of the portfolio buzz is created by profit motives or persons who have vested interests in assessment for institutional purposes, rather than true improvement of the educational experience. I still believe in the power of portfolios when they are an informed choice that can be updated as a flexible vehicle for frequent job changes—in a market where lifetime employment at one institution is unlikely.

Joe Scudder
Illinois
Comment posted on *campustechnology.com*

In my experience, the fastest-growing category of student-centered e-portfolio tools is so-called web 2.0 tools: blogs (such as WordPress and Blogger), wikis (such as Wikispaces and Google Sites), and website authoring tools (such as Weebly and Yola). Worthy of special mention is the Google Apps Education ecosystem, providing a variety of tools for authoring, storage, and data transferability. When looking at portfolios across the lifespan, it is important that portfolio data not be locked into silos, but exportable into open formats. In addition, the boundaries are blurring between social networking and e-portfolio development. The new Facebook Timeline is an interesting platform for lifelong and lifewide learning, reflection, storytelling, and meaning-making.

Helen Barrett
Comment posted on *campustechnology.com*

We are now in our third year providing a free global e-portfolio hosting service, *folio spaces.com*, built on Mahara. Our user base has increased 300 percent this year, and we now have users in virtually every country in the world. Early adopter teachers—those at the cutting edge—are already using e-portfolios with great success in their classes. The platform doesn't really matter; the pedagogy does. Whether students are showcasing achievement, reflecting on practice, or developing course resources, there is a useful role for e-portfolios. This semester I have trialed an open Social Media Marketing course, using a combination of Google+, Twitter, FolioSpaces, Moodle, and Facebook. Sounds chaotic, but it is the most exciting (and best received) course I have ever convened. Student reflection, collaboration, contribution, and the ability to include outside experts have contributed to a great learning experience for all of us. As we move beyond the lecture theater, e-portfolios will become an integral part of the lifelong learning journey.

Ian Knox
Australia
Comment posted on *campustechnology.com*

We are using WordPress at the **University of Oregon** for learning e-portfolios—in this instance, it works well because it is student- and instructional-driven, rather than assessment-driven. WordPress has solved many of the concerns institutions have about privacy when using an open source social media platform. One of the most interesting findings about student and faculty usage is that this platform fosters application and transference to professional domains, and "real world" applications. So, we see students employing both the technology and the process in their professional work and in connecting curricular and co-curricular learning—something that can be difficult to capture.

Lori Hager
University of Oregon
Comment posted on *campustechnology.com*

Saving IT

*"How Can the Campus IT Department Be Saved?" (*campustechnology.com/articles/2011/10/04/how-can-the-campus-it-department-be-saved.aspx*) reported on* ***University of Georgia*** *CIO Timothy Chester's keynote address at the CT Forum conference in September, in which he outlined five crucial guidelines for keeping higher ed IT relevant in today's campus landscape.*

An IT department that continues to think in [outdated] terms is subject to replacement, as with any organization or product line that fails to modify itself based on the realities of new markets. Technology is indeed driving change, and IT can capitalize on that by expanding its role of accountability and realizing that the job is to enable, not block, services. This takes new thought, new technologies, and a willingness to change with the times while not getting stuck in outdated "standards" such as complex structured cabling and Layer 2/3 switches or T5 Tube-style lamps. The technology is going the way of the dinosaur and being replaced by all-campus fiber "LAN clouds" that provide high-speed, non-fragmented networks and real choice in local, specialized, and virtual services for voice, video, data, sensors, and security services across campus environments. The next-generation plant removes much of the cost of current networked systems and collapses up to eight types of networked services to a single plant. It paves an expressway for non-fragmented, service-oriented capabilities while ending the fight over time, budgets, and technology needs.

David Quinn
Georgia
Comment posted on *campustechnology.com*

In his presentation, Chester said, "At the core of most of the discussions [about the way forward for campus IT departments] is some sort of fundamental change in how IT does its business and how it can be refocused to address both the technology and leadership needs of higher education to improve education as a whole." Such generalizations can be said of anything and are misleading. The main focus of using off-site resources is to cut costs, pure and simple. The academic part of a university needs the IT department to formulate and implement new ways to produce and share educational content, data, and ideas, and in formats now leaning toward live audiovisual. To say in a blanket statement that cloud-based services can do this for technically lacking educational staff is misleading. A working team of education and IT staff on campus is the best mix. Add to all this the fact that sensitive and proprietary data in the cloud can most certainly be stolen with the greatest of ease. How much better for local IT staff to be utilized, over the Wild West show known as the "cloud."

Anonymous
Comment posted on *campustechnology.com*

E-mail us at *editors@campustechnology.com*, or join the conversation on the web at *campustechnology.com*. Letters are edited for length and clarity.

Campus+Industry

TECHNOLOGY HAPPENINGS IN HIGHER EDUCATION

NEWS

COMING NEXT MONTH. The 2012 Campus Technology Innovators call for entries begins Jan. 1! We seek innovative colleges and universities that have deployed extraordinary technology solutions to campus challenges. Watch *campustechnology.com/innovators* for details.

CAMPUS TECHNOLOGY innovators AWARDS 2012

MOBILE LEARNING REPORT. Now in the fourth academic year of its ACU Connected mobile learning initiative, **Abilene Christian University** (TX) has issued a 36-page report (available at *acu.edu/technology/mobilelearning*) that documents its research projects, shares responses from members of the campus community, and divulges results from multiple student and faculty surveys regarding the mobility work. "Our efforts are increasingly breaking down the walls of the classroom, removing barriers so teachers and students can engage more fully with and take their learning more easily into the world around them," notes Bill Rankin, director of educational innovation at ACU. According to the results of a fall 2010 survey referenced in the report, 89 percent of faculty members bring mobile devices to class; 84 percent regularly use the devices in class; and half of faculty reported using the devices in every class. Between 80 and 90 percent of students responded that mobile device usage has improved collaboration in their academic experience, improved communication with teachers, and provided them with increased control of their learning environment. Read more at *campustechnology.com/articles/2011/10/24/mobile-initiatives-breaking-down-the-walls-of-the-classroom-at-abilene-christian-u.aspx*.

Courtesy of Apple

GEORGIA COLLEGE'S remote help desk system allows IT staff to diagnose problems from a distance.

REMOTE IT SUPPORT. **Georgia College** has adopted LogMeIn Rescue to provide help desk support to 2,000 faculty and staff on three campuses. The remote support system consists of a technician's console and an applet that users access to communicate with the technician and hand over computer control to support staff. It also includes an administration center for handling permissions, creating groups, surveying users, and reviewing technician performance. The IT help desk will now be able to work remotely to address issues that otherwise would have required support staff traveling to various campus locations. Staff will be able to diagnose IT issues from a distance; access devices remotely through an online console without preinstalled software; and configure and repair PCs, Macs, tablets, and smartphones via the internet.

SHARED PRESENTATIONS. Google has updated its Google Docs presentation tool with real-time collaboration and more than 50 new features. New functions designed to facilitate collaboration include presence markers for viewing team member activity; simultaneous editing from remote locations; the ability to track changes or revert to an earlier version of a presentation; and built-in chat. Among other new features are transitions; animations; the ability to draw charts, designs, layouts, and more; new themes; and rich tables, with merged cells and other options.

OPENING UP. Blackboard has announced it will support the publishing, sharing, and consumption of open educational resources across its platforms. The company is working with Creative Commons, an organization that has built legal structures that enable participants to share content while still maintaining copyrights, and will support instructors publishing and sharing their courses under a Creative Commons Attribution license. This will enable anybody to preview and download the course content in Blackboard and Common Cartridge formats. (Common Cartridge is an open standard from the IMS Global Learning Consortium that allows digital resources created by instructors to be used in multiple ed tech products, including competing LMSs.) The Creative Commons support starts with CourseSites, Blackboard's free cloud-based LMS. Read more at *campustechnology.com/articles/2011/10/20/blackboard-supports-sharing-of-digital-learning-objects.aspx*.

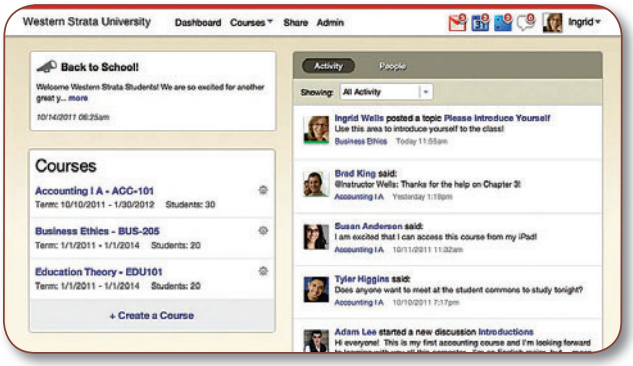
CLOUD ADOPTION SLOW. Despite the attention paid to cloud computing, most universities are taking a wait-and-see approach for applications

beyond e-mail, according to the 22nd annual Campus Computing Survey. The fall survey of 496 IT leaders found that more than two-thirds of responding campuses have handed off student e-mail to cloud providers, but the rate of conversion for faculty e-mail and office applications is much slower. As for applications such as enterprise resource planning and learning management systems, there has been very little deployment yet. Read more at *campustechnology.com/articles/2011/10/20/campus-computing-survey-mobile-apps-grow-cloud-adoption-slow.aspx*.

WIRE-FREE DORMS. After two years of work, the **University of Massachusetts Amherst** has fully replaced its Ethernet network in residence halls with an 802.11n wireless network built on Aruba Networks gear. The university no longer makes wired Ethernet available in most of these buildings. The project began with a pilot in a single residence hall that served about 139 students. When the broader implementation began, the IT organization identified "rogue" access points and developed an "airspace" policy for the residence halls, asking students not to set up their own access points and to unplug devices

U MASS AMHERST has fully replaced the Ethernet network in its residence halls with 802.11n wireless.

known to slow down wireless connections, including cordless phones, wireless speakers, printers, Bluetooth keyboards, and some gaming devices. Over the course of two summers, IT staff unplugged the existing Ethernet ports and deployed about 2,000 Aruba 802.11n AP-125 access points to provide network access. As a result, the number of registered network devices has increased and trouble tickets related to residence hall networking have been reduced.



PEARSON'S OPENCLASS LMS has no hardware, licensing, or hosting costs.

FREE CLOUD LMS. Pearson has introduced OpenClass, a free, cloud-based LMS for higher ed available through the Google Apps Marketplace for Education. Users will be able to launch OpenClass from within Google Apps or access their Google applications from OpenClass, which has no hardware, licensing, or hosting costs. Pearson, which already offers LearningStudio, an LMS intended specifically for distance learning programs, says the new service is intended for use in traditional face-to-face courses. Nine institutions are participating as design partners in the development of OpenClass, including Abilene Christian University, **Arizona State University**, and **Rice University** (TX). Read more at *campustechnology.com/articles/2011/10/13/pearson-debuts-free-lms-with-google-apps-integration.aspx*.

FREE IDENTITY PROTECTION. As part of a campuswide rollout of Identity Finder's data leakage protection solution, 30,000 **University of Connecticut** students will receive a free license of Identity Finder Home Edition. The software finds credit card numbers, social security numbers, and other personal information on hard drives, and gives students the ability to shred, redact, encrypt, or quarantine the sensitive information. Any college or university can provide Identity Finder to its students through the company's Free Student Initiative.

MOBILE DEVICE CHARGING. **Auburn University** (AL), the **University of Alaska**, the **University of Miami** (FL), and **Towson University** (MD) have implemented cell phone and tablet charging stations from NV3 Technologies, a company that sells kiosk technology. Each school has customized its deployment model. At Towson, for example, the charging service is free. "Since installing the NV3 cell phone charging kiosk in our student union, a very high-traffic area right in front of the entrance to our university bookstore, students have inundated us with positive feedback," reports Ralph Valle, director of marketing and new products at the university. At Auburn, students pay $5 per charge to use the kiosk; the university has allowed a private vendor, Commerce Networks, to place a charging station inside its stadium gates and takes a percentage of the revenue it generates. Each kiosk can charge 12 devices simultaneously and features an LCD screen that can display content running from flash drives or remotely via the internet. Read more at *campustechnology.com/articles/2011/10/04/universities-add-mobile-device-charging-stations-to-campus.aspx*. CT

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Giving Credit Where Credit Is Due

Technology is helping ease the transfer process for students transitioning from two-year to four-year schools.

FOR YEARS, TRANSFERRING from a two-year to a four-year college has been something of a nightmare—a maze of course requirements, articulation agreements, and credit calculations. The problem has become even more pronounced in light of federal programs to increase college graduation rates, with community colleges identified as a gateway to higher education.

Many schools are turning to technology to streamline the transfer process and help students track their academic progress. Here, we look at two institutions that have tackled the transfer problem from either side of the issue: guiding two-year students to become four-year graduates, and helping incoming transfer students reach their academic goals.

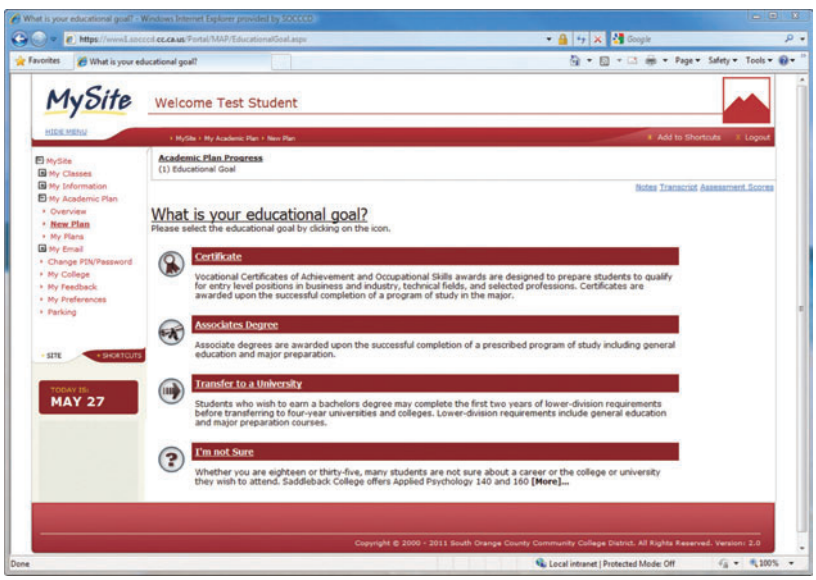
Answering the Call

In a perfect world, students using **South Orange County Community College District**'s (CA) online credit transfer information system would have attended a single school, set their sights on a single major (and stuck with it), and picked courses that seamlessly transfer to any four-year university.

In fact, it's a rare student who has all three bases covered. Most of the individuals attending SOCCCD institutions have already earned credits at one or more two-year schools, changed majors several times, and aren't exactly sure where they'll wind up earning their bachelor's—let alone advanced—degrees.

This situation makes the transfer process difficult at best. "Handling that level of complexity definitely presents a challenge," says Jim Gaston, associate director for academic systems and special projects for the Mission Viejo, CA-based district.

In 2005, SOCCCD set its sights on technology to make the transfer process smoother for its students. The project came about after President Obama's call for an additional 5 million US college graduates, 1 million of whom are expected to graduate in the state of California.



SOCCCD'S MY ACADEMIC PLAN helps students set educational goals and choose courses accordingly.

"There was a renewed focus on student success from the White House," recalls Robert Bramucci, vice chancellor of technology and learning services at SOCCCD. "As part of that integrated effort, we introduced My Academic Plan (MAP)."

At the time, SOCCCD's counselors evaluated—and dismissed—the online academic-planning tools that were available. "They then approached us in IT and asked if we could build one for them," says Gaston, who believes that the major advantage of this approach was the ability to deliver a system custom tailored to the needs of both students and counselors.

Built by in-house and contract developers using Microsoft .NET technology and a SQL Server database, MAP is an online portal that

students use to set up their individual educational goals, such as earning a certificate or degree, or transferring to a four-year institution. Based on these criteria, the MAP wizard helps students select a college and major, and produces a list of the required general education and major courses, as well as electives, available at the college selected. MAP then analyzes the student's current transcript, and shows which of the requirements have been met and which must still be completed. Students then choose the courses needed to achieve their educational goals.

According to Gaston, early work on the MAP project took about two years, and included gathering all information about "every transferable course at every single community college in the state," and enlisting student feedback on the online planning tool, which rolled out in 2007. Tight integration with the data from Project ASSIST (*assist.org*), California's statewide intersegmental articulation database, allows SOCCCD to provide specific guidance to its students. Funded by the state legislature, ASSIST maintains the list of courses that are transferable between the state community college, **California State University**, and **University of California** systems.

"MAP provides an interface that allows the counselor to enter the courses a student took at another community college," explains Gaston. "Thanks to the ASSIST data, we know if that course has been certified for transfer to the CSU and/or UC system."

To date, about 80,000 academic plans have been fed through the system. Gaston says high participation levels can be attributed to the fact that students were able to contribute design ideas as the system was developed, and continue to give their "two cents" regarding ongoing revisions and tweaks. It doesn't hurt that guidance counselors—who continue to work one-on-one with all new students—were also involved in MAP's development and rollout.

"We've heard from other institutions that counselors view online portals and programs as threats," says Gaston. "We didn't run into that. Our counselors came to us."

Other key features of the program include a transcript evaluation, which occurs every time a student accesses MAP, and a check for course prerequisites and required core courses that's handled via the school's web registration system.

Entering its fourth year of use, MAP has proven valuable not only to the district's students, but also to its counselors and instructional deans. "Counselors have benefited because students who use MAP come to advisement sessions with more focused and relevant questions," says Gaston, "while deans can predict future demand, because now they know which students intend to take what courses each semester."

Quick Decisions

Technology is also playing a key role at the university level, where incoming transfer students benefit greatly when they can quickly ascertain which of their credits will transfer, and what courses they need to take to achieve their academic goals.

At the **Minnesota State Colleges and Universities** (MnSCU) system, Louise Hoxworth, director of transfer and collaboration, and her team rely on a two-pronged system when it comes to incoming transfer students. With 32 institutions on 54 campuses in 47 communities, the college system utilizes Degree Audit Reporting System (DARS) and u.select from CollegeSource.

DARS collects information from a student's record and processes it against a degree program, while u.select is an online tool that allows students to view participating institutions' automated degree-audit and transfer-articulation systems. Using u.select, students can see course equivalencies and program requirements, enter and store coursework, and request an evaluation of transfer work against a specific program.

Hoxworth, who for 15 years has been helping students

Resources

Here is a selection of vendors that provide technology for student transfer advising, evaluation, and guidance. For links to each company's website, visit *campustechnology.com/1211_transfer*.

AcademyOne

AcademyOne provides various academic solutions that help learners explore academic and career pathways. The company's baseline tool, Student Passport, allows students to collect their academic history, self-assess prior learning, and navigate learning opportunities.

CollegeSource

The company's suite of products includes TES (Transfer Evaluation System), a hosted solution for transfer-credit evaluations, and CollegeSource Online, an online database of more than 58,000 digital college catalogs, institution profiles, transcript keys, and other resources.

Conclusive Systems

This academic software company specializes in degree-audit reporting software and tools. Its flagship Advisor product is a turnkey degree-audit solution comprising hardware, software, installation, and support services.

Decision Academic

Decision Academic is a provider of advising and curriculum management solutions. Its modular Navigator Suite centralizes data, automates workflow, and provides tools for managing transfer and degree options.

RedLantern

RedLantern replaced DARS in 2008 and merged with CollegeSource in 2009. Its offerings include u.direct (a web-based academic planning tool), u.select (a transfer portal), and u.achieve (degree-audit software).

transfer to four-year institutions, credits the combined system with streamlining the process. "I remember the days when a student would come into my office and hand me a transcript, which I then used to do an unofficial evaluation, followed by a registrar's official evaluation," she recalls. "It took a lot of time."

Since 2008, MnSCU has maintained a database of institutional course information for the state's participating schools, with a focus on those Minnesota institutions that have the highest transfer rates. "We can produce degree audits more quickly, and any student with a computer can see exactly where she stands toward completing a degree," says Hoxworth.

A student attending a two-year school who is interested in getting a bachelor's degree in biology from **Metropolitan State University** (MN), for example, can log into DARS and manually input her current and completed coursework. This information is shared with u.select, which will then show the student what courses she needs to take to prepare for the transfer. "The system tells her exactly where her classes fit into that future program at Metro State," says Hoxworth.

While technology has facilitated the transfer process, it hasn't replaced the need for a knowledgeable counselor or administrator. "There are still a lot of complexities within the transfer process, and just because a student is following a program doesn't mean she is taking the right courses for the targeted four-year program," says Hoxworth. "Advisers know more about the nuances of the process, and continue to play an important role in it."

Insider's View

By giving students a clear picture of where they stand, where they're going, and what they must to do get there, Hoxworth believes the Minnesota college system can more effectively manage the large number of students who transfer between the state's two- and four-year schools.

And such a system is becoming even more essential as the education environment becomes increasingly complex, with more students taking online courses and attending college well into adulthood. "Students are transferring in all directions," says Hoxworth. "Being able to assist them through technology definitely contributes to a student body that's more aware of where it stands, and a more educated workforce overall."

Because students are the ultimate beneficiaries of IT-enabled transfer systems, SOCCCD's Gaston says any institution looking to implement such programs should involve them early in the game. "Don't just make it lip service," he stresses. "Get students around a table and ask them where they want to go and what they need to get there—you'll end up with a student-centric system that does its job." **CT**

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jennifer grayson

Many Happy Returns

Moving course evaluations online saves schools money, time—even trees. But it doesn't mean more students will complete the surveys. Here's how to bump up those response rates.

Nigel Buchanan

WHEN WAS THE LAST TIME you wrote something by hand? Perhaps it was a scribbled grocery list, or last winter's holiday cards. Chances are it wasn't anything in-depth. Anyone used to typing on a laptop or hammering out e-mails on a BlackBerry knows how foreign a pen can feel—after two minutes your fingers start to cramp. So why are some schools still asking their students to complete course evaluations on paper?

For as long as anyone can remember, students at the **University of Oklahoma** were given in-class surveys for as many as five classes a semester. Not surprisingly, many loathed the pencil-and-paper process. "The students would write incomplete sentences, even phrases, and just dash off," recalls Paul Bell, dean of the College of Arts and Sciences. "Some wouldn't even write anything."

There was also the problem of profanity: "This class sucks" was an all-too-common response in the comments section of surveys. In one memorable instance, in response to a question about how an instructor could improve the quality of the class, a student wrote, "Die!"

So when the university decided to move its course evaluations completely online in 2009, Bell and the rest of the faculty and administration were pleased to see the quality of the answers improve.

Bell is the first to admit, though, that the move online was not prompted by a desire to tap into the more thoughtful recesses of student brains. It was done to save money—$100,000 a year in Scantron forms alone.

But you take your breaks where you can get them. The new system saves students from having to fill out the evaluations at the end of class, which is probably the worst time to capture students' attention. (Forcing them to write something at that point is cruel and unusual.) The school's web-based eValuate system, which was developed in-house, lets students log in with their student ID and password to answer questions on their own time.

"When they're sitting at home evaluating the class online, they're much more likely to write something that actually says something," explains Bell. "They're more comfortable writing online; they're used to writing online. You get much, much better feedback."

There is one problem: While the information is qualitatively better, it is not quantitatively so. Response rates have dipped, albeit slightly. Whereas 60 percent of the students would fill out the paper evaluations, the percent-

age of students responding online is now averaging in the high 50s. Once students get out of class, it seems, the likelier they are to forget to fill out the evaluation.

Bribery Works Well

This downward shift was even more dramatic at the **University of Miami** (FL). In 2006, the school switched to ConnectEdu, a hosted online system for course evaluations. The aim was to eliminate the task of scanning 100,000-plus faculty surveys every year—not to mention lessen the school's impact on the environment. While the school achieved these goals, the rate at which students evaluated courses slipped from 75 percent for the old paper-based evaluations to 50 to 60 percent for the online forms.

As at OU, the responses were definitely more informative, says David Wiles, executive director of testing and evaluation services, but the school nevertheless wanted to see a response rate comparable to that of the old system.

So a course-evaluations committee was formed, with faculty representatives from each of the schools, along with members of the faculty senate and student government. The committee decided to try a time-tested method: bribery. Students who completed an online course evaluation would be allowed to view their final grade for that class early.

Since course evaluations close only two days before all grades are posted, participating students don't get that much of a jump on everyone else. But the method has proven a powerful motivator nonetheless.

In just the first semester after adopting the incentive, schools saw student participation climb to 74 percent. Now that figure is hovering around 80 percent—higher than the rate from the old paper-based days.

The Role of Faculty

OU also offers an incentive—every student who completes the forms is entered into a drawing to win an iPad or the like—but Bell doesn't put much stock in that approach. In his view, there's a better, often-overlooked way to boost participation.

After Bell noticed that online return rates varied significantly from one faculty member to another, he decided to do some sleuthing. It turns out that professors with high student participation do something surprisingly low-tech: They *ask* their students to complete the surveys, which are sent out via e-mail.

"The single influencing factor is the faculty member," says Bell. "If a faculty member tells the students it's important—that he actually pays attention to what they say—he gets a much higher response rate than faculty who say nothing."

However, some faculty members may be reluctant to point students toward an online survey if they're not on board with the system themselves. One concern is security, says Bell: "Faculty members are always worried about who's got access to confidential personnel information."

In the past, paper forms were kept on file with each department or given to the faculty member to file. With the online system, data are now stored in a central database. Not everyone has access to all the information, of course (a department chair, for instance, can see only the evaluations of his own faculty), but some faculty still have concerns. As a result, some faculty members choose not to let their evaluation results be viewed—and very likely don't put much effort into trying to get students to participate.

Concerns about privacy go beyond faculty, however. Students, too, are sometimes hesitant to use the system. "We get students each semester who write to us, asking, 'Is this really going to be anonymous?'" says Wiles, who reassures them that names and e-mail addresses are not attached to any survey data.

In response to a question about how an instructor could improve the quality of the class, a student wrote, "Die!"

But hesitant faculty and students are a minority, and should not be considered the major impediment to participation. Convenience, more than anything, probably lies at the heart of student participation rates. With that in mind, OU's Bell is exploring other ways to bump up response rates, including a smartphone version of the survey, developed by Aaron Biggs, computer network manager for Arts and Sciences and author of eValuate.

The new version will be available for the iPhone and iPad. Bell believes that the go-anywhere capabilities of mobile devices provide the best of both worlds: Students in class can be encouraged to complete the survey right then and there, while others might fill it in while they're on the bus, or even in the waiting room at the doctor's office.

"It's part of an ongoing effort," says Bell. "We want feedback from students, we want to communicate with students. Students, by and large, don't want to be communicated with, yet they have a vested interest in helping make things better. So it's a constant dialogue to see what it is that they will actually respond to." **CT**

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Boston Marathon? More Like a Sprint

After first creating a basic mobile site, Boston College doubled down to launch a services-based mobile site in just eight weeks.

WITH THE GROWING popularity of smartphones and tablets, students and faculty are now relying on their Androids, iPhones, iPads, and BlackBerrys for many aspects of campus life. In turn, college IT departments are scrambling to deploy technologies that provide the best user experience on these handheld devices. Early in 2010, **Boston College** (MA) was among those scrambling.

A mobile website had been on BC's list of priorities for some time. While Information Technology Services (ITS) administrators had held a few meetings about it, each get-together seemed to generate more questions. "We wrestled with the issue of how to create a mobile version of the entire university website, while also offering portal-based services and fancy new widgets," says Scott Olivieri, web technology manager at BC. "And how can we do this quickly? Because we're behind, aren't we?"

Start Small

Faced with these challenges, BC decided to take a two-pronged approach. It would take small steps by first developing a mobile version of the BC website. And with that complete, it would then build a second, services-based site—something to which authenticated services could be added in the future.

In collaboration with the Office of Marketing Communications (OMC), Kul Thapa, an ITS interface designer, developed a basic mobile template to be used in the CMS. It featured a mobile-friendly layout and navigation, larger fonts, and retained the design of the school's main site. The navigation was changed from a top hover menu and nested left navigation to a bread crumb-based system.

"We needed a global hover menu, but knew it had to be compact so that it would function on a mobile device," explains Olivieri. "Rather than jam thousands of web pages into a small screen, our goal was to make a mobile version of *bc.edu* which did not stray from the design of the main BC website and was built from the ground up with regard to content and navigation."

BC has more than 200 websites and nearly 500 content contributors. In collaboration with OMC, ITS convened a dozen site owners to discuss their needs for a mobile BC website. "We made it clear that this was the first step in a phased approach," notes Olivieri. "The priority was to get mobile content out there. Services and custom mobile development would come later."

In meetings with the content owners, ITS and OMC showed them the templates and helped them create mobile pages. "Everyone is so busy," says Olivieri. "To get this done, we knew it had to be easy."

The key was to enable site owners to reference content from their existing websites. The CMS has the ability to reference any block of text or image from any page and pull it into the mobile template. The content can only be

edited at the source location, but if that source content changes, so does the content on the mobile page.

The mobile team was able to create a mini mobile site for one of BC's schools in less than an hour. It consisted of a dozen pages with an overview of the school, degree programs, some images, and news. "It was readable and usable," notes Olivieri. "It was a subset of the main school site, which is exactly the point."

After initial setup, content contributors can simply edit their original website pages, without having to worry about the mobile site. The university soft-launched the mobile site at *bc.edu/m*, without any advertising or even any redirects that would send mobile devices to the new mobile home page. "We wanted to coordinate the official launch of *bc.edu/m* with the new mobile site that would be services-based," explains Olivieri.

Involving a Vendor

For this second site, the university needed a framework to help speed development. "It was time for something driven by ITS, something that was new and device-independent and not clearly defined," says Olivieri. "We needed something that was a miniportal, with authenticated services, public services, and new modules that would somehow magically present the most important information and services to our students, faculty, staff, alumni, and visitors."

Rather than developing the site in-house, BC turned to Modo Labs, a company in nearby Cambridge, MA, that works in the mobile space. "We were immediately impressed by the vision, enthusiasm, and collaborative approach," recalls Olivieri. "And the core product, the Kurogo mobile framework, was open source [based on the MIT mobile framework] and therefore easy to try out."

A senior software engineer from Modo Labs worked with two developers from BC, training them on the Kurogo system and its extensible framework. The BC development team consisted of these two developers (both part-time), plus a web administrator, a designer, and a project manager. Despite the team's small size, BC was able to release its services-based mobile site, called Agora Mobile, in just eight weeks.

The Kurogo mobile web framework formats pages not only for cutting-edge smartphones such as Android or iPhone, but also for mobile devices with very different capabilities such as BlackBerrys and standard-feature phones. Even tablets such as the iPad receive a specialized template that provides an attractive and expanded user experience.

Kurogo features standard modules that most universities will find relevant: Shuttle, Events, News, Maps, and Directory. "The events module was very simple to set up, pulling in an RSS feed from our existing event calendar," says Olivieri.

Additional modules are available for more specialized needs such as tours and reunions. The Kurogo engine can also create custom modules, and a federated search can find items across all modules.

While Modo Labs offers professional services to help create these custom modules, its use of non-proprietary programming languages and open standards means that university staff can handle development in-house, if desired. With the mobile landscape changing so quickly, the ability to make rapid changes to the system—coupled with Kurogo's constantly updated device-detection system—gives BC confidence that its investment will serve the institution for years to come.

The service-based BC site has been up and running since June 20. "We've had no issues," notes Olivieri. "And we've received a lot of positive feedback from the campus community." **CT**

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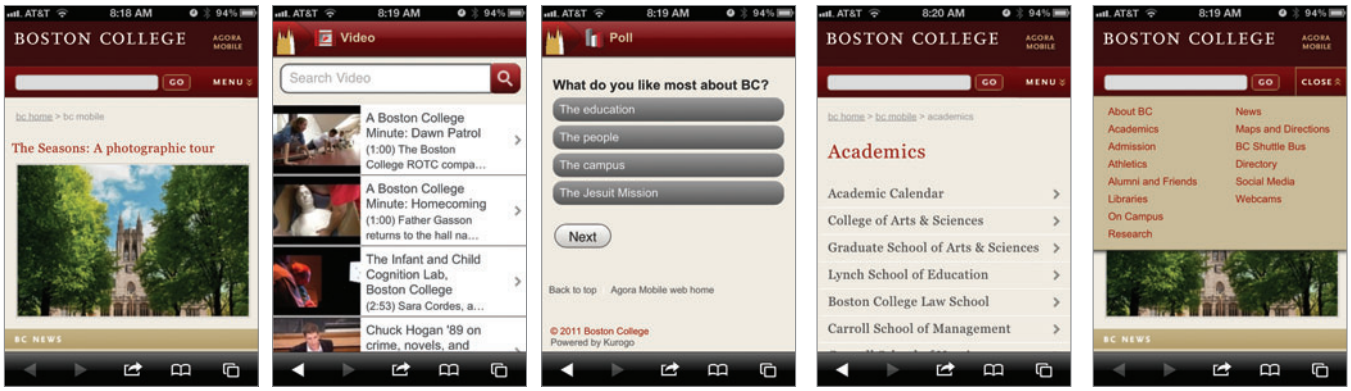

A Prescription for Tablets

While the tablet market is still in flux, early pilot programs reveal a variety of benefits on campus.

TODAY'S TABLETS ARE SMALL and light, they're relatively inexpensive, they have a long battery life, and, with the exponential growth in applications, they can do almost anything. Even so, the technology is still in its infancy, and experts predict there's a tablet explosion on the horizon.

Michael Gartenberg, technology adviser for Gartner, points out that tablet technology has been in the works for years, but it "was really Apple that created the mass market for tablets. The iPad has set the standard for other devices." Many other manufacturers—Samsung, Motorola, Toshiba, Lenovo, and Acer to name a few—have since joined the fray, building their tablets mostly on the Android platform.

Is There an App for That?

The availability of applications is the main distinguishing factor in the burgeoning market. "Most tablets have a pretty good form factor, a pretty good battery life, so it really comes down to whether the applications are there," explains Gartenberg. "Is the ecosystem there, with support for things like accessories and content?"

Apple has led the field in terms of app development, now boasting 140,000 apps for the iPad. It's essentially Apple and all the rest, Gartenberg says. And in a bid to catch up, the other tablet manufacturers have invested big in Android app development.

For example, Motorola is focused on making sure it "has the right partner ecosystem to attack the market," notes Sheldon Hebert, the company's senior director of enterprise business. "We're making sure we're working with the Blackboards of the world; making sure we're working with the textbook companies, so that you can leverage textbooks online instead of having to buy a book with your tablet as well. And we're making sure we're leading the foray when it comes to cloud-based applications." As an example, Hebert cites the capability for students to use Google Docs to publish a document and share it with their peers for editing.

For its part, Samsung runs pilots with university nursing and journalism programs to discover new uses for tablets. "Every time you do a pilot, you learn something," says David Lowe, vice president of enterprise sales at Samsung. "It may be about a particular application, and then we can roll that application into our portfolio of solutions. We may learn about a different use case that we haven't seen before. We may learn about a business model that we hadn't considered before—how these tablets are delivered, paid for, and supported."

Devising a Tablet Plan

With so many new options—and the tablet field changing so rapidly—many higher ed institutions are struggling to come up with a comprehensive plan for these devices.

"Every university we've talked to has been really interested in discussing tablets," says Lowe. "But the discussion has changed recently, probably in the last year: Before, they said tablets were going to disrupt classrooms and be a big challenge. Now they say, 'I can't stem the tide of these devices, so how do I embrace them? How

do I make them valuable to the learning experience?'"

These are the very questions the **University of Southern Mississippi** hopes to answer through a new pilot that kicked off in the fall semester, when USM handed out about 700 Samsung Galaxy Tab 10.1 tablets to select students, staff, and faculty.

Homer Coffman, USM's chief information officer, says the goal is to measure student usage and figure out what it's going to be like two years from now. The pilot will also evaluate the impact on IT, as well as the social and pedagogical effects of tablets.

"We noticed a proliferation of these devices throughout campus, and we noticed a gross disconnect between 'bring your own device' [BYOD] and the university and ERP systems," Coffman says. His team settled on Samsung Android tablets, in part for their ability to integrate with the school's Blackboard LMS. Coffman sees the integration of tablets as inevitable and pervasive, especially once the trend toward e-texts gains momentum.

"We're also seeing the students use the devices for more social reasons," he adds, citing a statistic that one in five students is on Match.com. "It's part of the total student experience to be both resident on campus and also virtual in cyberspace."

For now, the pilot tablets are paid for by technology fees. Coffman and his team are considering a number of funding options for expanding the program to the entire student body. Some options include advertising, with sponsors possibly wrapping the tablet with a branded design or delivering ads (carefully monitored for appropriate content) to students via the tablet interface. In addition, since the tablets make it easy to access digital course materials, Coffman's team is monitoring how tablet use reduces printing costs.

It's too soon to know the results of the tablet pilot, but Coffman says students and faculty are already beginning to use the tablets in innovative ways, particularly in cross-campus collaboration. Nonetheless, many users tend to return to their comfort zone, trying to make the tablet work like a laptop. In order to support more creative tablet use, USM is working with Blackboard Consulting to help faculty develop tablet-based solutions for the classroom. After all, says Coffman, success lies in rich implementation.

Affordable Textbooks

Other schools are taking a more measured approach to implementing tablets on campus. **Daytona State College** (FL) has been looking at tablets as just one option to solve a very particular problem: the high cost of textbooks.

Roberto Lombardo, chief information officer at Daytona, says his department wanted to find a technical solution for the many Daytona students who simply can't afford high-priced textbooks. When Lombardo and his team started looking at the numbers, they found e-texts at a savings of 40 to 80 percent off the price of the printed text.

Since many Daytona students already have their own devices for reading e-texts, including laptops, smartphones, and tablets, the school doesn't want to force a schoolwide change to just one device. Instead, it will rely on a BYOD scenario. For students and faculty who don't have their own device, Daytona expects to provide some tablet recommendations, though the school is still in the pilot stage for determining which models to select.

Lombardo acknowledges that the students who can't afford textbooks are likely the same students who will not have an existing device for reading e-texts. He says the school will encourage these students to purchase a device, since "the savings on two or three books essentially covers the cost of the device."

For now, at least, Daytona is shying away from implementing a tablet program like that at USM. "If you try to tackle the whole project—giving students the course, giving them the book, giving them videos—it becomes almost mind-boggling. There's just too much," Lombardo says. "We're trying to simplify. We're just going to replace the book. Start with that." He adds that he expects the uses of tablets on campus to evolve over time as the devices become more common.

For now, choosing a tablet is largely about determining your institution's needs. Do you want to invest in one standard device for the entire campus, or rely on a BYOD scenario? Do you have specific applications that your students must access, and which platforms provide those? Will you need to provide technical support for your school's tablet program, or will students have to fix and replace their own devices? These questions, rather than cost or form, are likely to be the deciding factors when you choose a device. And sooner or later you're going to have to ask them, because the tablets are coming. **CT**

Since tablets make it easy to access digital course materials, USM is monitoring how tablet use reduces printing costs.

RESOURCES

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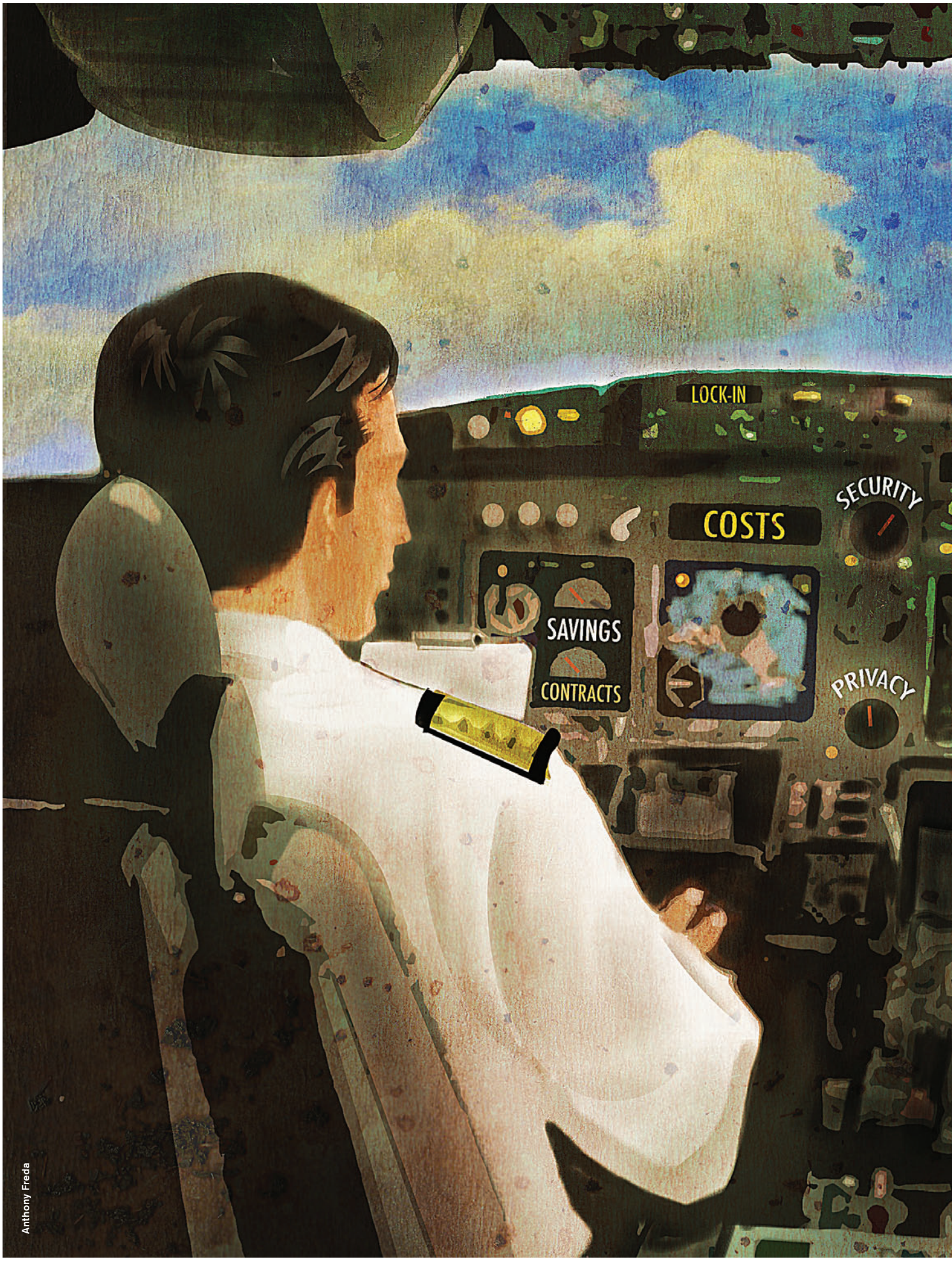


Anthony Freda

Art Credit

In the second of a two-part series, *CT* looks at how IT professionals can make the business case for cloud computing while addressing ongoing concerns about taking their institutions into the cloud.

By Rama Ramaswami, David Raths, Dian Schaffhauser, and Jennifer Skelly

CLOUD CONTROL

GIVEN SOME OF THE HYPE, you could be forgiven for thinking that the cloud holds the answer to everything, even cancer. In truth, some of the claims—massive savings, leaner IT staffs, fire-and-forget utilities—should come with asterisks attached. At the same time, there is good reason to be excited about what the cloud can do for institutions in higher ed, particularly in these straitened times. For many IT shops, the cloud offers an opportunity not only to improve operations but also to align themselves more closely with their schools' strategic goals.

The cloud is not a plug-and-play proposition, however—it's a complex, evolving landscape that demands your full attention. Security, privacy, contracts, and contingency planning are all issues that must be addressed. Here, *CT* analyzes the financial aspects of a move to the cloud, as well as potential stumbling blocks. ▸

MAKING THE BUSINESS CASE

"POSITIVE, BUT NOT UTOPIAN." That's how Reed Sheard, vice president for college advancement and chief information officer of **Westmont College** in Santa Barbara, CA, sums up his two-year experience with six different cloud initiatives, including Google Apps for Education, Meraki's cloud-managed 802.11n wireless network, and Salesforce.com.

Still, it has been a vast improvement from the pre-cloud days, when Sheard's small, overstretched IT team struggled to maintain basic services such as e-mail. "It has definitely improved the user experience for the 1,200 students here, as well as for the faculty and staff," he says, adding he will strongly consider cloud-based solutions whenever system changes are required in the future.

Cloud initiatives appeal to many campus technology leaders because they off-load services that are seen as commodities and free IT staff to work on higher-priority projects. As with any other application or infrastructure outsourcing, though, CIOs have to weigh potential risks and trade-offs, and make strong business cases to their chief financial officers, university presidents, and boards of directors.

The business case will differ depending on whether you are moving infrastructure or just applications to the cloud. Sometimes it involves difficult apples-to-oranges comparisons, as in replacing the Microsoft Office suite with free Google Apps. "The free e-mail services are attractive options, but as the cloud matures you will have to keep reviewing the business decision and the types of control you are giving up," says Ben Marglin, a principal with the consulting firm Booz Allen Hamilton who specializes in IT strategy for the public sector.

Universities are smart to start small with pilot projects that don't involve mission-critical data. Even so, it helps to have a clearly delineated cloud computing strategy. Twenty-nine percent of higher education institutions have already developed written strategic plans for the adoption of cloud computing, according to a 2011 tracking poll of 150 schools conducted by CDW-G. In fact, survey respondents expect to spend 15 percent of their IT budgets on cloud computing within two years.

Sheard has been able to show his Westmont administrators cost reductions of 55 percent over the lifetimes of the solutions he has moved to the cloud. For instance, the college had a storage-area network (SAN) that was nearly full. "We moved a terabyte and a half of archived e-mail into Google's cloud and freed up space on the SAN," he says. "That saved $125,000. We spend only $8,100 a year for all the cloud services combined. We also have freed up two FTEs to work on projects that matter much more to the college."

"I want to dispel the myth that there are any savings from personnel in cloud computing." *—George Baroudi, Long Island U*

What CFOs Like to Hear

"When you say *cloud*, CFOs hear *flexibility*," says Scott Bils, a partner with the Everest Group consulting firm. "They like paying only for what you use rather than building capacity that sits unused 80 percent of the time."

CIOs can make the case for eliminating excess capacity in their data centers. "Own the base, rent the peak" is becoming a common saying. In other words, with an application that has spiky demand, such as class registration, you cover the low point in-house and put the rest in a cloud. "The applications must be designed for that," Bils says, "but we have seen enterprises cut 30 to 40 percent off their infrastructure costs using this approach."

In 2008, **Hofstra University** (NY) hosted a presidential debate and, for that short period, the university's website ranked No. 8 on Google's global list of sites by number of hits. "We did all kinds of internal gyrations to handle that," notes Robert Juckiewicz, the university's vice president for IT. Now Hofstra is working with Amazon on website disaster recovery and traffic spikes. "By going to the cloud, we can be more elastic," explains Juckiewicz.

Another case to make to your CFO: Moving to the cloud means you can shift some costs from the capital expense column to the operating expense column. CFOs prefer operating expenses because they are typically paid for monthly and can be adjusted more easily in a volatile budget environment. This approach also saves CFOs from having to seek financing for capital projects, and may keep the school from investing in technology that becomes outdated in a few years. Analysts tend to agree that the smaller the college or university, the more appealing cloud offerings will be compared with long-term IT infrastructure and staff investments.

When Hofstra moved student e-mail to the free Gmail service and faculty and staff e-mail to a paid hosted Microsoft Exchange Online service, Juckiewicz had to build a business case for the president and provost.

"Our philosophy is to work on items where we can add value in-house and

move it out of house if we can't," he explains. "With e-mail, we were struggling and not adding value."

An aging GroupWise e-mail system was going to cost $250,000 to upgrade. "The Microsoft arrangement includes an archiving capability, so it improved the service and put us in a much better position for disaster recovery at a significant savings," Juckiewicz adds. "And we could eliminate all our spam filtering. That alone is just shy of the total cost of the whole Microsoft deal."

Other potential savings to highlight in any analysis of the total cost of ownership:

- Lower software-licensing fees
- IT staffing reductions or redeployments
- Reduced maintenance costs
- Fewer purchases of application servers and storage hardware
- Reduced burden on facilities, including buildings, HVAC, and utilities

Of course, the priorities behind cloud-sourcing decisions shift from time to time. In a 2010 Yankee Group survey of IT decision-makers across all industries, the top reason respondents chose software as a service (SaaS) was because it was cheaper and made software licensing easier. In the same survey a year later, the No. 1 reason cited was that it allows mobile users to stay connected.

George Baroudi, CIO at **Long Island University** (NY), uses Google for student e-mail, apps, and video, but he doesn't cite cost savings as the key reason to consider the cloud. "I want to dispel the myth that there are any savings from personnel in cloud computing," Baroudi says. "There may be some savings in servers or electrical costs, but, in terms of personnel, it costs us the same amount."

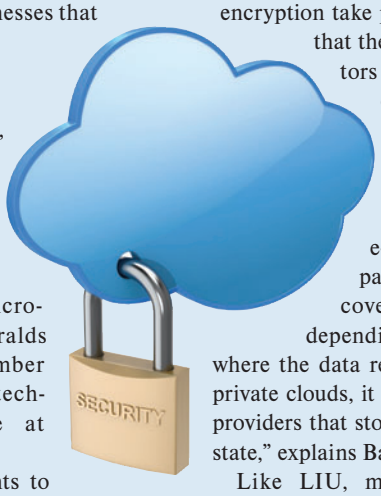
LIU maintains control of creating and eliminating accounts and passwords, and uses the same staff members to handle this task as it did before the move to the cloud. "We can't make a business case for it on strictly financial terms," adds Baroudi. "It's more because you see this as the evolving realm of computing. It makes us more resilient and flexible. The students are connected all the time."

LOOK BEFORE YOU LEAP

WHILE THE IDEA OF saving money and streamlining IT operations on campus is very attractive, institutions need to be aware that cloud computing is still an emergent technology, with some very real concerns and weaknesses that need to be addressed.

Security

In surveys of IT leaders, security is always the No. 1 concern that keeps organizations from either adopting or further implementing cloud computing. Headlines such as *PC World*'s "Microsoft Cloud Data Breach Heralds Things to Come," in December 2010, are enough to keep technology executives awake at night.



Before LIU moved students to Google Apps, says Baroudi, the university's compliance department had to be satisfied that Google could uphold the school's strong privacy and security expectations and comply with the Family Educational Rights and Privacy Act (FERPA). Baroudi also ensured that login and encryption take place at LIU, and that the university monitors everything at its end.

He also decided not to put higher-risk administrative e-mail in the cloud, partly because e-discovery laws vary depending on the state where the data reside. "Even with private clouds, it is difficult to find providers that store data all in one state," explains Baroudi.

Like LIU, most universities have few qualms about putting stu-

THE RIGHT QUESTIONS TO ASK

The Office of Public Safety & Institutional Assurance at **Indiana University** has developed a list of questions about privacy and security that all schools should ask themselves before adopting cloud-based solutions.

- **Security and safeguards:** How would the vendor ensure that cloud service access privilege changes are applied accurately and in a timely fashion? How would the vendor ensure that only authorized individuals are able to modify access privileges? Can the vendor support encryption of data at rest or in transit if necessary?
- **Confidentiality and privacy:** What are the privacy risks and/or open records consequences of the information and/or service involved? Can we control how the vendor uses our information? How do we address user concern about vendor privacy policy? Do we need to provide an alternative service for users who do not wish to expose themselves to the vendor's privacy practices?
- **Legal and regulatory consequences:** How does the use of a cloud service impact our ability to comply with various legal requirements such as HIPAA, FERPA, PCI DSS, e-discovery, state data protection laws, or export control laws? Do laws where the vendor is incorporated or locates its servers (which may even be in foreign countries) potentially apply?

dent e-mail and documents in the cloud, but they are holding off on more sensitive information for now. Although the intersection of e-discovery and cloud computing is still relatively new, courts are expected to require universities to ensure that their cloud providers comply with the schools' document-retention policies.

Addressing the issues of e-discovery and compliance with laws such as FERPA and the Health Insurance Portability and Accountability Act (HIPAA) is just the start. Colleges and universities should also gather as much information as possible about a cloud provider's security systems, retention policies, and history of data breaches.

Some providers have been criticized for their lack of transparency about security. "Transparency is a key differentiator among providers," says Bils from the Everest Group. Cloud providers such as Amazon, Rackspace, and Salesforce.com have the most secure data centers on the planet, he adds, but university CIOs must still establish their own policies and then discern whether the providers meet them.

"The cloud providers don't want to make their privacy policies public because it may invite hackers," explains Yankee Group principal analyst George Hamilton. But customers should turn to valid third-party audits such as ISO 27001 and the SysTrust audit.

"We need to perform security assessments of vendors when sensitive data is involved," adds Andrew Korty, deputy information security officer in the Office of Public Safety & Institutional Assurance at **Indiana University**. "We also need to add language to contracts to ensure the vendors continue safeguarding the data over time. Agreeing to standards on security assessments and contract language would make the process easier and more efficient for both the vendor and the institution."

At IU, cloud vendors complete a questionnaire about how they safeguard data. "We review the vendor's answers and have a follow-up call to make sure we understand each other," says Korty. "Then we ▶

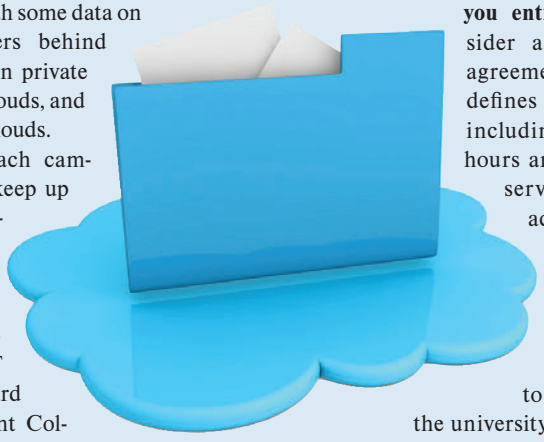
"The cloud providers don't want to make their privacy policies public because it may invite hackers." *—George Hamilton, Yankee Group*

consult with our data stewards [individuals throughout the institution charged with making risk decisions about various types of sensitive data] on whether the risk is acceptable."

Before utilizing cloud technologies, universities should evaluate applications and infrastructure for vulnerabilities and verify that security controls are in place and operating properly, says Booz Allen's Marglin. He also suggests setting up an active monitoring program that uses services such as intrusion prevention, access and identity management, and security-event log management to identify any security threats.

Some universities are turning to tools such as VMware's Horizon Application Manager, which allows organizations to set up authentication and policy controls for SaaS applications. IT security executives can monitor who is using which application and can set granular policies. Users on the LAN or VPN might have certain privileges, for example, while users on public WiFi at the airport have read-only access.

Hamilton predicts that in a few years cloud storage providers will appeal to specific vertical markets, agreeing to comply with whatever regulatory requirements apply to that sector, be it education or healthcare. In the near term, universities are more likely to operate in a distributed environment, with some data on dedicated servers behind firewalls, some in private or consortium clouds, and some in public clouds.



Of course, each campus's ability to keep up with developments in data security will depend on the size and sophistication of its IT operations. Sheard at tiny Westmont College says that, after a thorough assessment by his staff, he was convinced the college's data "will be much safer in the cloud than in anything we could afford to do here."

Contracts

College and university administrators have been negotiating contracts for computing services for decades. Contracts for cloud computing services don't diverge dramatically from what administrators are used to—but there are differences. One thing is abundantly clear, though: It is important to sweat the small stuff.

"You can't walk away," says Thomas Trappler, director of software licensing at the **University of California, Los Angeles** and an authority on cloud computing contracts. "With cloud computing, everything comes back to the contract."

"With cloud computing, everything comes back to the contract." *—Thomas Trappler, UCLA*

Trappler and David Cottingham, senior director of managed services at CDW, suggest four questions to ask when working with a cloud provider, and offer four pieces of advice.

Ask these questions:

- **If you end up not being satisfied with the services you receive, how do you terminate the contract?** Can you terminate for convenience or must you have cause?
- **If there is a provider outage, what are you entitled to?** Consider a service level agreement (SLA) that defines service terms, including how many hours and minutes the service must be accessible. If the provider fails to meet the SLA, what are the penalties or credits to be awarded to the university?
- **In case of a catastrophe (for instance, a natural or man-made disaster) or major data loss, what are the provider's contingency plans?**
- **What responsibilities do you have as a customer?** For example, if a student or staff member uses an application or uploads a virus that damages the system, what is the university's responsibility? In some cases, the provider's acceptable-use policy can shut your service down. If that happens, your institution must have its own contingency plans to be able to operate.

Follow this advice:

- **Gather input first.** Form a group of key stakeholders or subject-matter experts that can evaluate the impact of a cloud service before it gets adopted. The membership may vary depending upon organizational needs, but would typically include: the department that has the business need, IT vendor management/IT procurement, IT technical, legal, IT security, IT policy, risk management, and audit/compliance.
- **Describe—precisely—the level of service that will meet your needs.** Spell out the parameters and definitions for each element of the service you expect, along with remedies for service levels that are not met. For example, information-security standards will vary depending on what a certain department is doing with its data. Make sure you have all the information on your needs before you start negotiating with a provider.
- **Trust, but verify.** Check out the physical infrastructure of the provider's facility. Don't forget that your data still reside in a brick-and-mortar building. Where is the data center? Are there security guards and video cameras? Even if you're moving to the cloud, there's still a "there" there. Know where it is.
- **Conduct due diligence.** Some organizations, such as the Cloud Computing Association (*cloudcom.org*), are trying to establish cloud computing stan-

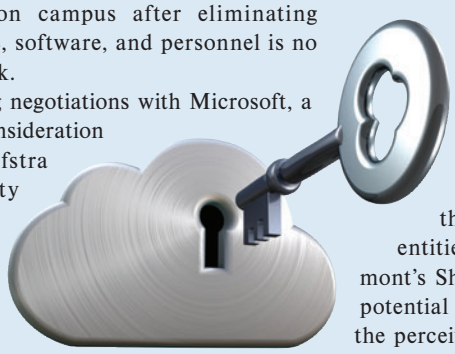
dards, but none of these is perfect. Nothing beats an old-fashioned investigation. And much of that involves (you guessed it) reading the fine print.

For more on the topic of cloud computing contracts, Trappler has written what may be the definitive article on the subject, "If It's in the Cloud, Get It on Paper," available at *educause.edu/educause+quarterly/educausequarterlymagazinevolum/ifitsinthecloudgetitonpaperclo/206532*.

Migration and Lock-in

Porting your data to a service provider is sometimes easier than getting it out. When assessing and managing the risk of cloud computing, you often hear the term "vendor lock-in." But the impact of lock-in depends on whether you are considering software, infrastructure, or platform service clouds, each of which has its own level of commitment.

In each situation, institutions must have an exit strategy—a plan for moving data to another provider or back in-house if things go bad. Given the relative immaturity of the cloud business model, vendor shutdowns and acquisitions are inevitable. Unfortunately, re-provisioning service on campus after eliminating hardware, software, and personnel is no small task.



During negotiations with Microsoft, a major consideration for Hofstra University was how it would take a year's worth of e-mail back if it terminated its contract. "We chose Microsoft because we felt it has a real commitment to this area long-term," Juckiewicz recalls. "Other vendors have excellent capabilities, but who knows if they will be around? We did our best to choose a vendor that would work with us on contingencies, but making a change [still] wouldn't be easy. We just made sure there are several months built in to ending the relationship."

The level of caution you exercise may vary with the size and financial clout of the vendor. "With a company like Meraki, I had to negotiate a slightly different type of contract to protect the college than I would with much larger entities like Google," says Westmont's Sheard. "You have to weigh the potential risk of their disappearing with the perceived benefit to the college, and then make recommendations to the president and board."

Having redundant vendors is a good idea, when possible. When Amazon's web services experienced outages, some customers went down; others had built-in ▶

redundancy, either to other Amazon servers or by automatically cutting over to other vendors.

Migrating from one infrastructure as a service (IaaS) vendor to another is definitely possible, but could be expensive and require consulting help from cloud experts.

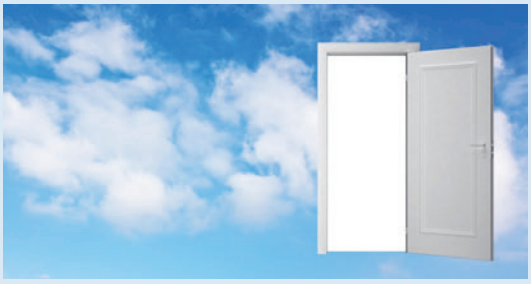
The term platform as a service (PaaS) refers to a web-based development environment for cloud-based services. It provides enterprises with access to shared, scalable IT resources on demand. University software developers who are building applications on a cloud platform such as Microsoft's Azure Services or Google's App Engine should look for the capability to port those applications from one vendor to another or move them in-house without having to rewrite them.

Open source options are often worth considering. In collaboration with NASA, Rackspace Hosting has launched OpenStack, whose development model is meant to foster cloud standards, remove the fear of proprietary lock-in, and create a large ecosystem that spans cloud providers.

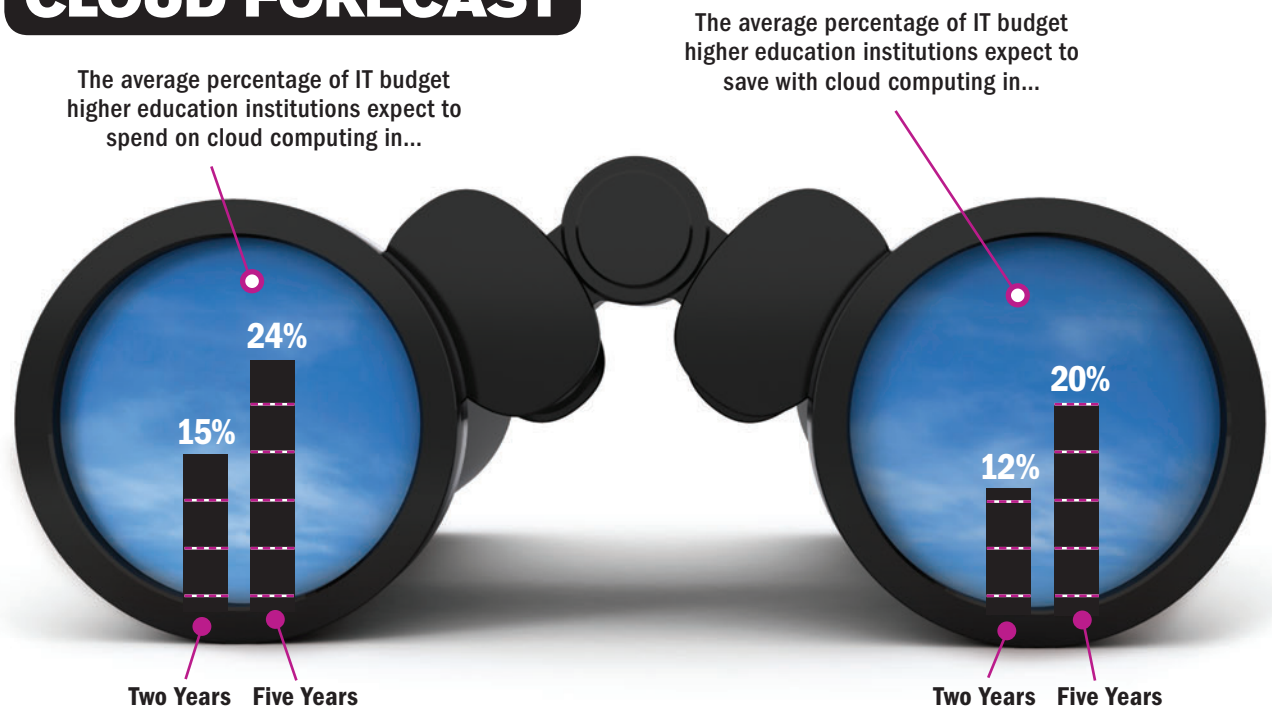
Booz Allen's Marglin says it is best to view cloud services as you would a utility, so how much you can negotiate with vendors may be limited: "You may not have a lot of choice, but you should have your eyes open and always have a back-up plan."

IU's Korty recommends inserting a "data liberation" clause in the cloud contract, stating that the institution will always be able to take its data elsewhere. "The agreement should also require the vendor to securely delete all of the institution's data from storage media," he adds, "including backups, after handing it over."

Institutions must have an exit strategy—a plan for moving data to another provider or back in-house if things go bad.



CLOUD FORECAST



Source: CDW-G 2011 Cloud Computing Tracking Poll (based on responses from 150 IT professionals)

HOW TO PLAN

IN SPITE OF vendor promises to get you up and running in mere hours, early adopters have learned that undertaking a cloud initiative is like tackling any other transformational IT project. It calls for the same basic script: Start small; work hard to prepare users for coming changes; learn as you go; continuously improve what you're doing. And beyond that, prepare to improvise.

Put Your Team Together

While you're seeking senior leader support, get others involved—the people in infrastructure, application development, and security, as well as deans and professors. All of them need to be aware of where your institution's cloud plans are headed. Plus, shared ownership of the decision will come in handy as problems surface. (Consider it a bad omen if all fingers point to IT.)

Put together a dedicated cross-functional team to focus on the move to the cloud, with an eye to how some of these same team members (now with experience) can be shifted to future cloud initiatives.

Evaluate cloud vendors as rigorously as if you were choosing a new wireless provider. Create a scorecard, attach scoring criteria, and engage your community as much as possible in the assessment process.

Be wary of vendor promises. They all claim to have the perfect solution.

Use an Experienced Negotiator

Be wary of vendor promises. They all claim to have the perfect solution. Right now, the cloud scene is evolving as large operators consume smaller ones. Short of peering into a crystal ball, do the due diligence necessary to make sure the vendors are going to be around to support you—and, if they don't stick around, find out how you'll be taken care of in their absence.

Once you've selected a vendor, approach contract negotiations as if you were outsourcing a service. Bring in the purchasing person who has the most experience with service provider contracts; much of the language and hidden "gotchas" will be similar.

Stay Involved

Finally, continually assess user satisfaction with the cloud service. Not only will this process let users know that you haven't simply handed off oversight of their IT needs to some invisible technology god, but the results could reveal hidden benefits and deficiencies that will come in handy the next time you shift something to the cloud.

VIRTUALIZATION AND THE CLOUD: NOT THE SAME THING

THE TERMS *cloud computing* and *virtualization* are often—and mistakenly—used interchangeably. They are *not* the same. Indeed, comparing the cloud and virtualization is a bit like comparing an iPod to its earbud. While the earbud is a key component of the iPod, it is just one part of a bigger whole. The same goes for virtualization and the cloud.

And just as an earbud can be used elsewhere, virtualization can happen without the cloud. Indeed, as many institutions can attest, virtualization often plays a vital role in university data centers, computer labs, and more—with no cloud in sight.

So what is virtualization exactly? Virtualization comes in many flavors: storage, desktop, memory, operating systems, servers. Put as simply as possible, virtualization allows you to do more with less. Most computers aren't used to their full capacity. Indeed, the average enterprise server runs at 5 to 10 percent of its capacity. Virtualization offers a way to consolidate the number of servers you operate by using just one machine to handle applications that had previously been handled by several physical servers.

This neat technological trick is performed with virtualization software, which was initially pioneered by IBM back in the 1960s. Today, it's one of the hottest IT fields on the planet, with players such as VMware, Citrix, Dell, Microsoft, Sun, and Oracle all duking it out for market share. Essentially, the software partitions a server into multiple virtual computers, each isolated from one another and with the capability to operate just like an actual server.

In a way, virtualization software acts like a mirrored fun house, tricking the system into believing there are more servers than there really are. But the benefits are very real. Virtual servers use less hardware, space, and power—and require less cooling—all of which reduces infrastructure and administrative costs. And when the need for more server space arises, users can carve a virtual server out of the existing hardware, rather than going out and buying another machine. What may have taken weeks to implement before can now be done in mere minutes.

The same principle underlies storage, desktop, memory, and operating system virtualization: The system fools the computer into handling multiple users' needs on one piece of hardware—a useful feature for universities that need to manage multiple machines from one location or provide identical services to multiple users.

It's safe to say that virtualization is already in place on the servers used by most public cloud providers, although the end user would never notice or see it. When it comes right down to it, the decision to virtualize an institution's servers or go to the cloud is not really a technological choice—it's a *business decision*. CT

Virtual servers use less hardware, space and power—and require less cooling—all of which reduces infrastructure and administrative costs.

Don't miss our new Cloud Computing Resource Center for the latest cloud news, features, and other resources: *campustechnology.com/cloudcomputing.*

Rama Ramaswami *is a freelance business and technical writer based in New York City.* ***David Raths*** *is a freelance writer based in Philadelphia.* ***Dian Schaffhauser*** *is a senior contributing editor of* Campus Technology. ***Jennifer Skelly*** *is a freelance journalist and screenwriter based in Los Angeles.*

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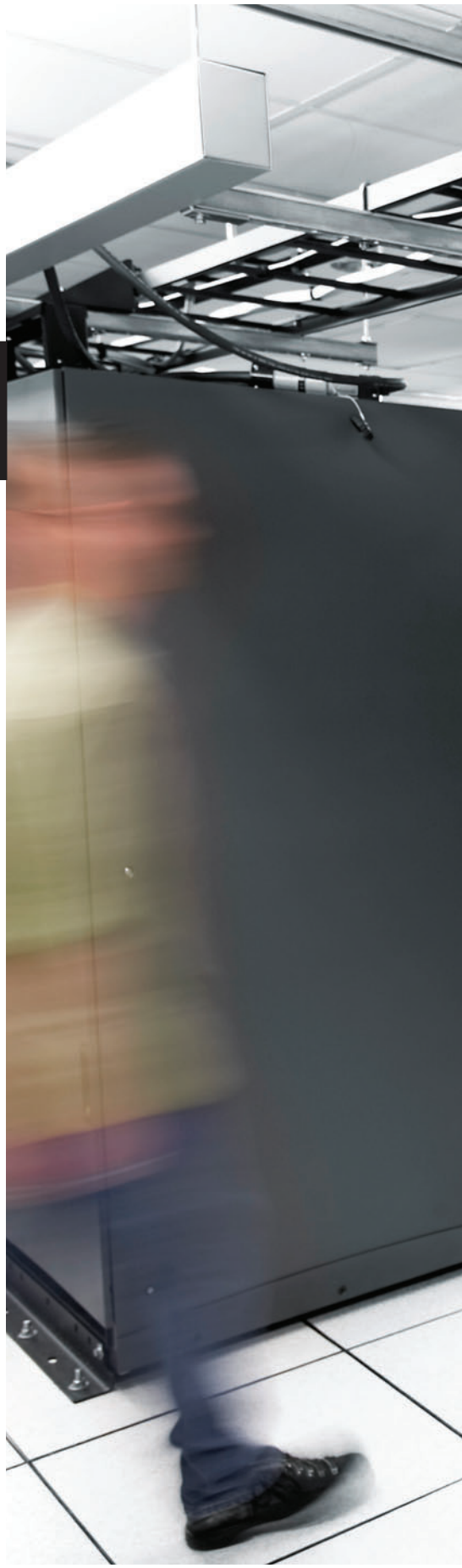
Look around any IT conference and the disparity is obvious: Women are completely outnumbered. Why does IT remain a male-dominated field, and how can more women find success in it?

WOMEN in IT



TODAY, FEMALE STUDENTS outnumber males on campus, earn a higher number of BA degrees, and surpass men in completing advanced degrees. So there's a certain irony in the fact that executive roles on campus are still dominated by men. And IT is no exception. Women hold only 21.4 percent of the approximately 2,600 executive positions in higher education IT, according to a 2011 report titled "Women Technology Leaders: Gender Issues in Higher Education Information Technology."

"Those women who do seek higher education CIO or other IT leadership roles face a double challenge," wrote Marilyn Drury, the report's author and the director of ITS-Educational Technology at the **University of Northern Iowa**. "They must overcome barriers related to the traditionally male-dominated higher education organization as well as those related to the traditionally male-dominated IT field."

CT asked three women working in executive positions in IT for their perspectives on the root causes of this imbalance, and what it takes to succeed as a woman in this field.

Campus Technology: Why are there so few women in top IT positions in higher ed?

Pam McQuesten: In the late '70s when I got started, the newly emerged, renegade world of microcomputers was open to anyone with a case of techno-lust and interest. Gender was simply not an issue. As technology became more connected to the enterprise and its complexity grew, the field began to more closely resemble the institutional cultures in which it was embedded. In higher education IT, that often translated into a focus on deep technical knowledge and a predominantly male working environment.

Dana Hoover: A number of research articles every year point out how difficult it is for women to rise to the top positions in a number of fields—information technology is no different. As women, I believe that we hurt ourselves by not asking for—or taking—the recognition we deserve for the work we do. In a 2004 article titled "Do Women Lack Ambition?" psychiatrist Anna Fels wrote, "Women refuse to claim a central, purposeful place in their own stories, eagerly shifting the credit elsewhere and shunning recognition."

She's right. I find myself doing this all the time. I am currently running one of the most successful iPad research projects I know of, yet I constantly have to tell myself that it's okay to talk about the project's success during senior staff meetings or in conversations with university officials. It's much more comfortable for me to wait for someone to notice that the project is a success than to ask for that recognition.

Like many women, I want to succeed professionally, and recognition at work is important to me. Over the years, however, I've noticed that I have hesitations and reservations that are common among many women in the workforce. For example, I generally have to push myself out of my comfort zone to ask for perfectly reasonable things that cost money—such as extra resources, opportunities, and special project funding. I didn't realize this until I read *Women Don't Ask*, by Linda Babcock and Sara Laschever [2007, Bantam Books]. This book changed my life.

"As women, I believe that we hurt ourselves by not asking for—or taking—the recognition we deserve for the work we do." *—Dana Hoover, Pepperdine U*

CT: What challenges have you experienced (if any) from being a woman in IT?

Jill Albin-Hill: Right from the start there were very few women in the field, especially on the technical services side of IT. As help desks developed, more women were employed there as an extension of customer service or call center/dispatch. Because of this, I felt as if I had to work hard to prove myself. The competitive spirit from years of playing sports certainly helped drive my need to close more trouble tickets, bill more hours, or take on any project.

I will never forget an incident when I was a desktop support technician, placing a warranty service call with a large computer manufacturer. Having troubleshot the problem to a bad motherboard, after answering the routine questions like make, model, serial number, and error messages, I shared my diagnosis. The male representative was completely dismissive, even saying, "How would you know?"

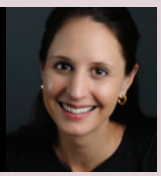
McQuesten: On a couple of occasions, I have been challenged to prove my technical chops by people who don't understand that being able to ask the right questions is more important in the continually changing world of IT than being the source of the answers.

CT: How did you decide to pursue a career in technology?

Albin-Hill: Coming out of high school, I thought I wanted to be a math teacher. I knew I'd go to junior college, where my

OUR PANELISTS

JILL ALBIN-HILL
Jill Albin-Hill is the chief information officer for **Dominican University** in River Forest, IL, where she also teaches courses in IT for the Brennan School of Business. She has been with Dominican since 2003.



DANA HOOVER
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PAM MCQUESTEN
Pam McQuesten is vice president for information resources and chief information officer at **Occidental College** in Los Angeles. She has responsibility for the library, scholarship technology, and information technology.

SNOW WHITE AND THE SEVEN DORKS

BY LUCY APPERT

*Lucy Appert is director of educational technology, liberal studies program, at **New York University**. She co-chairs NYU's joint faculty and IT task force directing the NYU Sakai OAE project, and she leads the User Reference Group for the Sakai OAE Community Project.*

We call ourselves Snow White and the Seven Dorks—me, the leader of the User Reference Group for Sakai's Open Academic Environment (OAE) project, and the seven male institutional representatives on the project's steering group. When Sneezy, Happy, Grumpy, and the gang get together with colleagues, the male-female ratio gets thrown even further out of whack. At last June's Sakai Conference in Los Angeles, a project dinner included 15 guys—and me.

As a "hybrid," an academic who works as a liaison between my program and the university's central IT division, you might think that I would be used to this. But I'm not, because the gender breakdown at NYU's Information Technology Services is actually more balanced than at most institutions. In fact, during the conference in L.A., I couldn't wait for the arrival of my NYU-ITS cohort, so I could stop representing 51 percent of the population all by my lonesome.

While I do get comedic mileage from my "Today's Gender Count" updates that I send from tech conferences, I'm ambivalent. My academic background in gender theory makes me prone to weigh the implications of both the appearances of this imbalance and the work we're doing to undercut them.

Appearances do matter. A female colleague with strong developer skills and an impressive technical résumé argues that it's impossible to know how many women are in the developer community because it is easy to participate virtually and hide behind gender-neutral names, as she does. She keeps a roster of important women in the field and advocates for greater recognition of their efforts. She works from the valid assumption that we are more likely to join communities that include people who look like we do.

Moreover, what we create tends to be influenced by the way we experience the world. It's a particular caution for software developers, whose virtual environments filter so much of life today. To apply the lens of gender theory, software built under the influence of the socially constructed masculine (not to be confused with biologically male) modes would be hierarchical, focused on tightly defined roles and limited sharing of power with users. Voilà! Instructional technology as we know it, particularly the LMS. "Translator" positions like mine exist largely to bridge the gap between the world as instructional software developers experience it and as the academic community of users understand it.

But you can take this kind of thinking only so far. The world of software is evolving into a landscape of collaborative, hub-like platforms into which users load apps that suit their needs, and, when such apps don't exist, build them. The hierarchical world where the developer is king is morphing into a world where developers and users collaborate to build systems that are better for everyone. Ironically, technology is increasingly reflecting what gender theory identifies as socially constructed feminine (not to be confused with biologically female) modes, community and collaboration.

At the dinner with the 15 guys in L.A., I pointed out the rather obvious gender disparity. In response, one of the OAE project's younger developers said, "I never would have noticed that!" I believed him, because I also know from my years of teaching gender theory that the privileges of being a member of a majority are often invisible to those individuals. And I remembered that he also felt part of a minority: At his first Sakai conference the year before, he exclaimed, "Everyone here is so *old*! How can they possibly make relevant software for students?"

It's a valid question, and one that probably not coincidentally informs the project on which we—the Kid and Snow White—find ourselves collaborating. Ours is instructional technology software on the new model—less hierarchical and more collaborative—one that allows student developers to create apps that shape their educational environment rather than just being led through it.

So, in spite of what our dinners look like, I feel confident that the Dorks, the Kid, and Snow White are part of an important shift that is bringing increasing diversity to the technology landscape. Now *that's* a happy ending.

dad taught electronics. The day of freshman orientation, Dad talked me into trying a new program—computer science and computational mathematics. It ended up being the engineering program with computer-programming classes thrown in. When I got some actual hands-on experience during an internship, though, I realized I did not want to be a programmer! So I majored in computer management instead. This still required COBOL programming, but it also exposed me to more computer applications and databases.

Luckily, after that first internship, I was able to continue working summers and breaks for the same organization. I got to try other things, such as helping to pull cable to install a token-ring local area network. I spent a summer visiting remote work sites to help with systems and install software. I loved solving problems and teaching people how to use the systems.

McQuesten: My original undergraduate major was in radio-television-film. I became fascinated by the intersection of technology, communication, and content. In 1978, a dean gave me a microcomputer and asked me to implement computer-assisted instruction. I learned how to program in BASIC

REDEFINING THE CHALLENGE

BY REGINA KUNKLE

Regina Kunkle is vice president for state and local/education for NetApp. The company was recently named one of the World's Best Multinational Workplaces by the Great Place to Work Institute and Fortune *magazine.*

In business and, more specifically, in the business of technology, there is a perception that it is a man's world—that men hold women back and we struggle to get our fair spot at the top. I strongly believe this is a misconception: It is *not* a battle of the sexes at all. In fact, it has everything to do with the perception of technology as a career field. If young women don't enter the field in the first place, it makes it hard for them to be at the top in later years.

The problem we face is one of supply, not of demand. Years ago, when I took computer science courses, about 40 percent of my classmates were women. We were excited about the new career field and eager to discover what might lie ahead. Fast-forward to today and we see information technology and similar majors with 8 to 10 percent female enrollment. The perception of careers in technology has changed from being exciting and interesting to "boring" (to quote my teenage daughter and son). Most of the young women and men I meet think IT professionals sit in cubicles and code all day. Those of us in IT know that this couldn't be further from the truth. The reality is that I travel, meet interesting people, help solve serious business challenges, and truly have fun!

So the battle we are really waging is the perception of IT. Layered onto that is the perception of women in IT—or the lack thereof. I passionately believe that it is critical for women leaders in IT to be more visible as role models. We must once again launch the IT career field as exciting and interesting for women.

In my position, I've had the opportunity to work intimately with the best and brightest women leaders in education and IT, partnering with them to make strategic business decisions that improve the way their institutions operate. I know my customers and industry well, and feel honored to be part of a group of women who have "arrived."

As successful women in higher education and IT, we have a responsibility to provide the education and support that will help young women pursue a technology career. I sponsor events on campus for women students and am thrilled that there are always men in attendance, too. There is a real desire for women in the field—unfortunately, many are self-selecting out. Young women need to be aware that some amazing IT companies are hiring—even during recessionary times. When budgets are cut, companies and institutions turn to technology to solve their issues.

My advice to college students is to follow your passion, be it writing, art history, or whatever fulfills you. I strongly urge young women to add courses to their curriculum that allow them to make their education IT-ready. This can mean being an English major and writing for a high-tech firm. Or being an art history major and taking classes on graphic design for the web. Like many other successful women in higher ed IT, my career was not built solely on technology classes. I was previously a lawyer, and am a better writer and speaker because of it. Like many other female executives, I bring a unique, well-rounded background to my current position.

My passion for educational excellence and giving back to the community has pushed me to pursue activities outside my day-to-day responsibilities in ways that build on my career. I believe that if young women are aware of the diversity of these opportunities, a career in higher education IT becomes more appealing and can inspire a new era of successful women moving up the ranks. There is no dramatic battle of the sexes in IT. It is about successful women reaching out to our aspiring women leaders of the future—offering a hand and paving the way.

There is no dramatic battle of the sexes in IT.

and created a set of programs for students to use. The sense of creativity and excitement induced by what could be accomplished with that very personal technology was addicting, and I've been fortunate to enjoy that feeling ever since.

CT: What can higher ed do to encourage women to pursue a career in IT?

Albin-Hill: It is extremely important to bring more visibility to the various career options. Much of the curriculum still revolves around programming. It certainly has a foundational role in teaching stepwise processing and even basic troubleshooting skills, but are we doing enough to link the role of technology with the success of the business? I also believe that many of the future jobs in IT will require excellent project-management skills and the ability to talk with people from the front line to the executive suite.

Hoover: As women leaders in IT, we need to continue to break ground and move up the ladder so that we can encourage other women by example. When someone goes before you, you can see the path and the opportunities. Without that, the landscape can look more opaque than it really is.

In my first job, I was lucky and had a great mentor who really wanted to see me succeed. Since then, I've gone in search of great mentors (men and women) who could help me chart my career. In addition to having a number of incredible mentors at **Pepperdine University** (CA), I've also had the opportunity to encourage and support the career plans of several men and women I work with daily. I couldn't be prouder when I see them succeed.

McQuesten: For the same reasons many institutions are focusing on STEM programs to increase broad participation by students, we need to focus efforts on encouraging women to move into senior IT roles and supporting them to be successful in those roles.

CT: What advice would you give a young woman who is interested in a career in IT?

Albin-Hill: Go for it! It is a very fulfilling and satisfying career choice. I am absolutely thrilled that I can make a difference every day for someone and help move my institution into the future. What more could a girl ask for?

McQuesten: I would tell her that there is no more important field to be in: Digital technologies are profoundly transforming scholarship, learning, and the operations of our institutions. We need people who are passionate about the opportunities that technology enables for people to envision, create, design, discover, share, and connect with each other in a global academic community.

Hoover: Go for it! My colleagues and I go to work every day to support and promote the technologies that are changing the way students learn, the way faculty advise and teach, and the way staff conduct the business of the university. **CT**

go

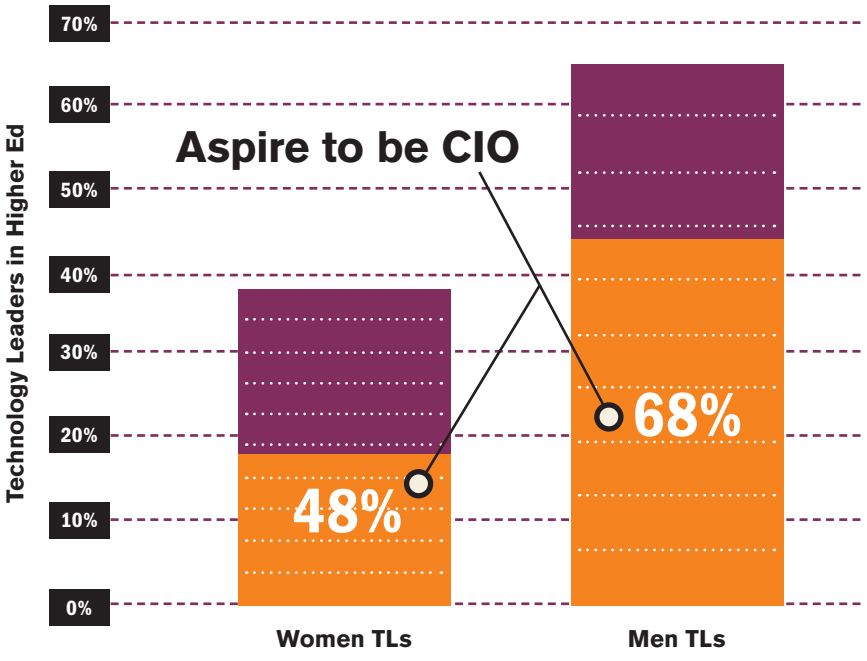
EYE ON THE PRIZE?

A 2011 study of women in IT, conducted by the Center for Higher Education Chief Information Officer Studies (CHECS), suggests that the number of women CIOs may actually drop in the future, due to a higher percentage of women IT leaders planning to take early retirement—or simply not wanting the top job. To read more about the CHECS study, go to: ***campustechnology.com/1211_ciostudy***

WHERE TO FOR I.T.'S #2?

The CHECS study (see "Eye on the Prize?" above) surveyed Technology Leaders (TLs) in higher ed, defined as men and women who occupy the position directly under that of the CIO. Out of the 37 percent of TLs who are women, 48 percent said they aspire to be CIO, compared to 68 percent of men TLs.

Source: 2011 study by Center for Higher Education Chief Information Officer Studies (CHECS)



SPECIAL ADVERTISING SECTION

CAMPUS TECHNOLOGY Focus

LMS Usage Soars at OCtech

Early this year, Orangeburg-Calhoun Technical College in South Carolina, widely known as OCtech, conducted an independent review of its learning management system. The good news: the LMS currently in place—CampusCruiser LMS—was determined to be the right choice for the school's needs. The bad news: the college was using only about 10 percent of the LMS's capabilities.

Armed with that news, OCtech set out to improve the quality of its course offerings and increase LMS usage—resulting in a big boost in student success rates.

CampusCruiser is a software-as-a-service provider whose suite of offerings includes CampusCruiser LMS, as well as portal, e-mail, emergency alert, and course evaluation software—all of which OCtech uses. OCtech, one of 16 colleges in the South Carolina Technical College System, has about 3,000 students.

OCtech adopted CampusCruiser LMS in 2006. OCtech had been running CampusCruiser's portal and e-mail solutions for several years and was pleased with those products. When school officials began looking for an affordable LMS, they wanted a system that would integrate seamlessly with the CampusCruiser products already in use plus offer reliable customer service. CampusCruiser was an obvious consideration. Another selling point: CampusCruiser's compatibility with the school's administrative software, Datatel Colleague and WebAdvisor.

The school's review of its LMS system had been requested by Warren Yarbrough, OCtech's new dean for online education programs. His decision to look closely at how effectively the LMS was being used was precipitated by past online course evaluations, which showed that "course quality was all over the map."

The remedy to this variability, Yarbrough decided, was to increase OCtech usage of its LMS. "We needed a format and means of delivery to create consistency and quality" in OCtech's online courses, he explains. CampusCruiser LMS could provide just what he needed, he realized, since the LMS can be used to measure criteria such as whether course content is arranged in manageable pieces, and whether instructors present information using a variety of technology found in the LMS (such as Message Board, Chat Room, and Bookmarks). Now under Yarbrough's direction, all online courses must adhere to a checklist that includes those items and many more.

Less than a year after the review, the school has made a dramatic turnaround in its LMS usage. Both Yarbrough, a former English instructor, and Amy Westbury, an instructional designer who also serves as coordinator for OCtech's online program, estimate that the school's online learning program, in particular, is now using 80 to 90 percent of the system's capabilities.

Even better, Yarbrough says, is the dramatic increase already in the school's passing and retention rates. Since courses have been revamped and instructor training increased, OCtech has seen a jump of approximately 50 percent in passing and retention rates, based on one semester and a summer session so far.

Faculty training paves the path

OCtech's road to more uniform course quality and nearly ubiquitous use of CampusCruiser LMS' features revolves around focused, mandated faculty training. LMS skills learned during faculty development have been built into performance evaluations.

Gradually teaching instructors all of the ins and outs of the LMS, it turns out, has made them—for the most part—enthusiastic, appreciative users, Westbury says. She conducts the training, and says that instructors tend to "come away saying, I learned something I didn't know I could do." That is especially true for features like the ability to use the LMS to import class content from a previous semester. That allows faculty to easily transfer their syllabus, assignments, and other content into the next semester, saving extensive time and effort.

To make the LMS training structured and specific, it was linked to five job duties that were in turn part of each instructor's performance evaluation. Job duties included course management, content expertise, and skills in instructional design, delivery, and assessment. For each job duty, Yarbrough and Westbury planned instruction in one or two features in CampusCruiser LMS. Each month, several features are explained in repeating sessions, which are a requirement for instructors. The "content expertise" job duty, for example, calls for training and skills in CampusCruiser LMS's Class Import Manager and Assignments Editor features.

Additional LMS features that Westbury covers in the training include use of e-mail, chat rooms, message boards, and blogs; then importing classes, making online assignments in the LMS, sharing files, designing course, and bookmarking specific areas.

Training is based on time Westbury spent with Jill Ferrie, CampusCruiser's "academic concierge." While Westbury already knew how to use the LMS system, she says, during training with Ferrie she learned about many additional features and functionality, and is now passing that expertise on to instructors.

Having successfully revamped many of the online courses and increased LMS participation rates, with big jumps in success rates to validate his moves, Yarbrough says that the goal continues to thoroughly train faculty—and students, who generally require much less instruction—on all of the features of the LMS that are applicable. "Everything is there in the system," he points out. "We just need to make sure we're using it."

For more information on how your school can take advantage of an affordable LMS with reliable, always-on customer service, contact CampusCruiser at 877.450.9482.

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From Great Expectations to a New Pragmatism

Changing the perception of IT's role can lead to more productive campus conversations.

By Mary Grush

After his keynote at Campus Technology 2011 in Boston, Campus Computing Survey founder/director Kenneth C. Green told *CT* why he's calling for a new pragmatism in discussions about IT on campus.

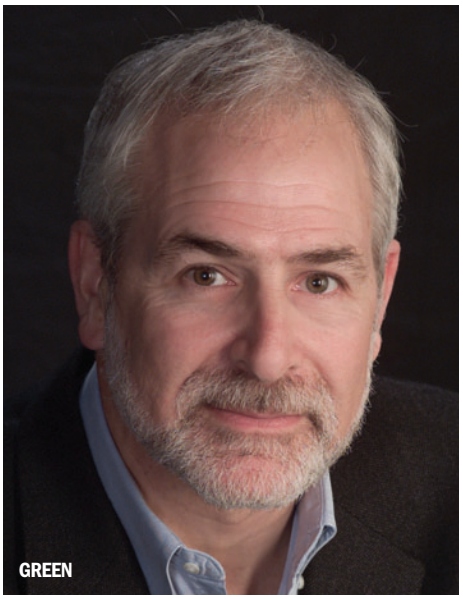
CAMPUS TECHNOLOGY: How have expectations for IT in higher education changed?

KENNETH C. GREEN: With the arrival of microcomputers in the 1980s, many of us felt as if we had embarked upon a new journey. The emerging desktop technology fueled great aspirations. Advocates pointed to an impending technological revolution in higher education. Expectations remain high, and while the enabling technologies have changed dramatically, we still see campuses wrestling with many issues that were part of the campus conversations two and three decades ago.

CT: For example?

GREEN: Here's a statement by Patrick Suppes, who offered what was perhaps the first online course in higher education, at **Stanford University** [CA] in the 1960s: "One can predict that in a few years, millions of schoolchildren will have access to what Philip of Macedon's son Alexander enjoyed as a royal prerogative: the services of a tutor as well-informed and as responsive as Aristotle." [Patrick Suppes in *Scientific American*, October 1966]

CT: What's the problem there?



GREEN

GREEN: Suppes' statement is more than 40 years old. Yet you could just dust it off and use it today as an aspirational statement about IT in either K-12 or higher ed. We have a long paper—now digital—trail of campus-planning documents about the impending and presumably improving role of technology in teaching, learning, instruction, and campus operations.

What we have learned over the past three decades is that the technology is really the easy part in the campus conversation about technology and education. The really critical issues, other than money, involve what I call the five P factors: planning, policy, programs, people, and patience. These factors affect an entire learning infrastructure that makes technology useful, adds value to technology tools, and offers support for both students and faculty. Technology is simply a tool.

CT: Would you refocus conversations about IT from technology to learning and learning infrastructure?

GREEN: Yes. Let me close by drawing from an article I co-authored with Ellen Wagner, the executive director of WCET, earlier this year: "The conversation about learning, online or on-campus, is about what all students learn and what learning environments and enabling resources and technologies foster student learning." [paraphrased from Kenneth C. Green and Ellen Wagner, "Online Education: Where Is It Going? What Should Boards Know?" (Association of Governing Boards of Universities and Colleges, *Trusteeship*, January/February 2011)]

We need a new pragmatism about the power, potential, and also the limits of technology. And we need to focus on technologies that provide real evidence of impact and benefit for student engagement and learning. **CT**

Editor's note: A Mediasite video of Kenneth C. Green's keynote, "The Fourth Decade of the 'IT Revolution': Continuing Challenges and Opportunities," at Campus Technology 2011 in Boston, can be found at campustechnology.com/summer11.

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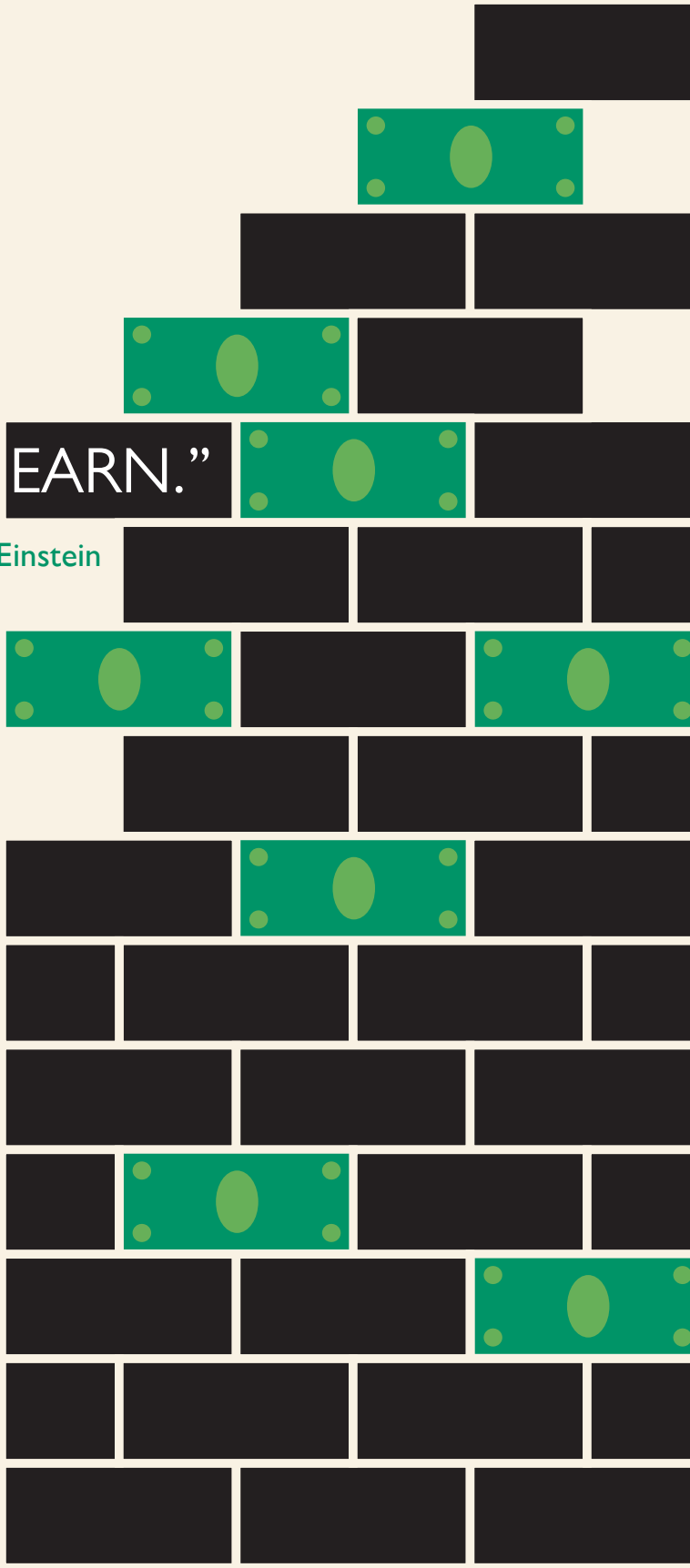
-Albert Einstein



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