Empowering the World of Higher Education

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WE RECOGNIZE 9 HIGHER EDUCATION TECH INITIATIVES THAT DARED TO BE DIFFERENT: p. 27

San Jose State University, the first institution to blend MOOCs and on-campus courses, garnered one of this year’s nine CT Innovators awards.
MOOCs Eat Stanford! Harvard Closes!

Given how quickly MOOCs are evolving—and how much hype surrounds them—we all need to pay more attention.

OUR ANNUAL Innovators Awards issue is one of my favorites. The winners—this year we have nine—represent educators and IT teams that have come up with uncommon solutions to common campus challenges. I particularly like the fact that these creative approaches don’t necessarily require scads of money. Indeed, many of the most innovative solutions emerge in spite of—or because of—a lack of funds.

A case in point is San Jose State University, a winner in our Education Futurists category (see page 28). Faced with drastic cutbacks, backlogged course enrollment, and soaring tuition among California schools, SJSU is experimenting with massive open online courses as a way to change the calculus. The key word here is experimenting: SJSU’s pilots are intended to help the school fulfill its mission even as the foundations of higher education start to wobble.

San Jose State’s blended MOOC pilots are really an innovation on an innovation. I don’t think anyone would deny that MOOCs have been the most influential idea in education over the past two years. We have written our share of MOOC stories over the last 12 months, but each week new developments force us to rethink what these online courses mean for higher education.

For example, Coursera’s May 27 announcement that it will now serve as a platform for cross-institutional, credit-bearing courses changed the playing field yet again. Is the prix-fixe experience of branded academia truly giving way to buffet-style degrees? While detractors will argue that huge courses warmed by online chafing dishes cannot match freshly cooked fare, MOOC fans will view the same setup as à la carte schooling, where famous academics serve up their finest offerings to eager consumers. Use whatever culinary metaphor you will, only one thing is really clear: The traditional American college plan has become as unsustainable as a daily diet of foie gras.

Yet no one can say with any certainty where MOOC mania will lead. In fact, every time we think we know the answer to one question, it spawns a host of new ones. At CT, we want to play whatever role we can in keeping you up to speed during this period of rapid change. So, starting this month, we are launching “MOOC News and Analysis,” a newsletter devoted to all things MOOC (you can subscribe here). In addition, we are devoting the entire August issue of CT to coverage of MOOCs—everything from potential business models to the merits of cMOOCs and xMOOCs.

Ultimately, though, the thorny educational issues posed by MOOCs will be hashed out through countless discussions and arguments—both online and face-to-face. To that end, I invite you to join the conversation on our lively Campus Technology MOOC Community on Facebook.

Continue the conversation.
E-mail me at abarbour@1105media.com.
BEGIN COLLEGE ONLINE. Students who enroll in Paul Smith’s College (NY) can now take entry-level classes through online course provider StraighterLine, and the credits will transfer to the school. StraighterLine provides self-paced online-only courses in math, science, English, business, the humanities, and languages. Courses use text, audio, video, and interactive games, and initial tuition includes access to personal tutors. These courses cost $99 per month plus $49 per course, and are evaluated by the American Council on Education’s College Credit Recommendation Service. Read the full story online.

BITCOINS FOR TUITION. Draper University (CA) is the first to accept bitcoiins for tuition. The institution, which bills itself as “an unconventional world-class boarding school for the brightest young entrepreneurs from around the world,” also accepts other non-traditional forms of payment, including barter, equity, profit sharing, and even advertising tradeouts. Bitcoin is one of several cryptographic currencies generated by end users (“miners”) who tap their CPUs, GPUs, and other processing hardware to solve hash algorithms, resulting in newly minted virtual coins. Read the full story online.

SMARTPHONE GROWTH. Smartphones are expected to overtake feature phones in worldwide shipments for the first time this year. According to a recent forecast by market research firm IDC, year-over-year growth in smartphones will approach 33 percent in 2013 and continue strong for the next five years. Read the full story online.

CROWDFUNDING COMPUTERS. Microsoft is launching Chip In, a service that lets students crowdsource funding for their next computer for school. Students create a profile, register to purchase a laptop, desktop, or all-in-one system, then publish (through Facebook) their call for contributions from family members and friends. Microsoft is contributing 10 percent of the purchase price as well as free Office 365 software. Read the full story online.

WEBSITE IN A BOX. The University of Arizona has unveiled UA Site-in-a-Box (SIAB), a site creation and management platform that helps campus groups create and maintain high-quality, UA-branded web presences. When faculty and staff of any UA department, club, or organization request an SIAB site, the SIAB team sets up the arizona.edu subdomain name and creates an empty shell of the site with the design and UA branding in place, ready to be populated with content. SIAB is built on the Drupal platform, a free, open source content management framework written in PHP, which is also the platform behind the main UA website. Read the full story online.
COURSERA IN THE UK. The University of London International Programmes will launch four massive open online courses (MOOCs) on Coursera, becoming the first English university to offer classes on the platform. “Both Coursera and the University of London share a common mission based around access,” said University of London Vice Chancellor Adrian Smith, in a prepared statement. “By combining our experience—which is essentially delivering distance and flexible education since 1858—with Coursera’s innovative technology, it provides us with the scope to explore for even greater access to lifelong learning.” Read the full story online.

MOOC BILL PASSES. California state senators voted unanimously last month to pass Senate Bill 520, despite opposition from California Community Colleges, California State University, and the University of California. The bill establishes incentive grant programs for the state’s public universities and colleges to develop online courses on MOOC platforms, as a way of reducing the bottleneck for required gateway courses. Read the full story online.

UNATTENDED DATA. A portable storage device containing the personal data of more than 14,200 people was left unattended in a computer lab at Champlain College (VT). Although an internal investigation has found no evidence of actual use of the data on the device, the college is providing a year of identity monitoring for people whose information was vulnerable to misuse. Champlain will also implement new procedures for data collection and data transfer. Read the full story online.

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Aug. 14-16
Society for Applied Learning Technology Interactive Technologies Conference
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Aug. 18-23
The Data Warehousing Institute World Conference 2013: Agile BI
San Diego
Sept. 14-23
SANS Institute Network Security 2013
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To submit your event, e-mail editors@1105media.com.
Display Gear Revs Up at InfoComm 2013

Advances in display technology were on parade at InfoComm 2013 in Orlando, FL, June 12-14, including a number of touchscreen devices, wall displays, new LED monitors, and related A/V gear. This year, the show attracted 35,126 audiovisual professionals attending from more than 110 countries around the globe. For a taste of the newest products from the exhibit floor, check out the slideshow above and read the roundup on campustechnology.com.
In an era of instant communication, it’s ironic that faculty and staff at major universities often struggle to share their discoveries with colleagues on campus. It’s doubly ironic when that knowledge involves mobile devices. Yet that’s exactly what’s happening in the siloed world of higher education.

“We have an extremely decentralized university,” notes Chase Masters, an instructional technology consultant who provides support services for faculty and staff in the College of Literature, Science & Arts at the University of Michigan. “As far as mobile technology is concerned, we didn’t know what was happening anywhere else on campus.”

Conversations with other support staff at U-M confirmed that they felt the same sense of isolation. So Masters and another instructional technologist, Lauren Atkins Budde, decided to form the U-M Mobile Users Group.

The idea for the user group first arose in 2010, after the release of the first iPad. “We had a few meetings with faculty interested in getting their own iPads,” recalls Masters. “We met informally a couple of times to talk about this new device, how to use it, and what it meant.”

Platform Agnostic

But the iPad is just the tip of a burgeoning presence for mobile devices on campus. Plus, Masters and Budde were not interested in a user group that was narrowly focused on a single operating system. “What makes this group unique is that it’s not an Android or iOS group,” explains Masters. “It’s a shared meeting ground for all users of any mobile OS or device. We try to create an environment of shared knowledge and equity between platforms.”

The group is open to faculty and staff from “all over” the university. A core group of approximately 100 “mobile enthusiasts” meets once a month in person to discuss a wide variety of mobile issues. The agenda for the most recent meeting, for example, included a roundtable discussion of CamFind, FocusTwist, Yahoo! Weather, and Pebble, a Bluetooth-enabled smartwatch.

In addition, the group holds workshops on the basic use of mobile devices and mobile apps for education. Workshops conducted by group members have included mobile scavenger hunts, augmented reality games, how to give a presentation using mobile devices, and creating apps and mobile sites.

Read the full story online at campustechnology.com.

Chase Masters and Lauren Atkins Budde will present “When Mobile Learners Are the Teachers: Creating the University of Michigan Mobile Users Group” at Campus Technology 2013, July 29-Aug. 1 in Boston.
4 Keys to Designing a Virtual Desktop Environment

The CIO of Lone Star College System discusses how to evaluate desktop virtualization opportunities, set up pilots, and ultimately establish a reliable production environment.

This is the second installment in a three-part series on desktop virtualization. Part I focused on planning and building a business case, while Part III, in our September issue, will examine the TCO and ROI.

Once you’ve evaluated the strategic value of a virtual desktop initiative on campus, you need to define exactly what your production environment will look like. You want a clearly defined architecture that will exceed your defined service levels and provide a rich customer experience—while keeping the project on track and on budget. Here are four steps to help you achieve your goal:

1) Monitor Demand
First, you need to know how your customers actually use computing resources on campus and what systems offer the best opportunities for desktop virtualization. Many tools on the market provide visibility into how systems are being used. By monitoring application demand and system-resource utilization, they can identify those systems that are prime candidates for desktop virtualization. At Lone Star College System (TX), for instance, we identify these opportunities by looking at the last 30 days of usage data.

These assessment tools can serve double duty since many also have the ability to monitor issues that may occur after you stand up your virtual desktop environment. This allows the IT team to ensure that newly deployed applications are performing well and that the appropriate resources are available.

2) Establish Proof of Concept
Before you finalize a deployment plan, it’s critical to pilot a virtual desktop environment. This is actually the easiest part of the project, and the time and resources spent at this stage will significantly improve your ability to provide a comprehensive solution later. Before starting any pilot, though, first clearly define its goals and scope. It’s all too easy during the pilot phase to shift the project’s scope and lose momentum as a result. What is your area of focus? Student resources, personal devices, learning centers, computer labs? Is the emphasis on administrative functions such as busi-
ness operations or kiosks? What about faculty: Will this be an additional or sole resource for this group?

It makes sense to start small, too: A virtual desktop pilot of 20-30 seats can yield the same results as a 50- to 100-seat pilot without the same complications. If possible, try to test your pilot on infrastructure that mirrors your planned production environment—just on a smaller scale. This will help identify potential problems.

Be careful not to over-pilot. If you spend too much time on pilots, the project can lose credibility.

To ensure the long-term success of your virtualization effort, also be sure to involve all areas of your IT shop in the pilot. It’s the perfect time to identify and train key staff to support the production systems, and to include external experts alongside your IT staff. The knowledge gained by your staff will lead to improved support for your eventual production systems. Desktop virtualization involves a radical shift in how IT provides both desktop and infrastructure support, so provide every opportunity possible for staff to develop the skills they will need.

By its very nature a pilot is of limited scope, so it’s important at this point to calculate the scale of the full project. In designing your final core infrastructure, the challenge is to determine what the number of your actual concurrent connections may be. If your pilot is focused on an administrative function such as business operations, for example, the concurrent connections ratio will be much higher than for a pilot dealing with student computing resources.

One final caution: While planning and testing are absolutely imperative, be careful not to over-pilot. If you spend too much time on pilots, the project can lose credibility.

3) Set Expectations
While a pilot project can be more forgiving than a production environment, it is nevertheless critical to define your service levels early. Your final design will be based on these service levels. One advantage of all virtual desktop solutions is they are built on a virtual server/application platform, which has an inherent resiliency that can prevent major system failures.

To start, you need to identify the acceptable level of risk, or tolerance. How tolerant will your organization be if, during login, a “boot storm” brings the process to a crawl? What will happen if the core infrastructure fails and all systems go down? Will students still want to use virtual desktops if the systems are slow over a wireless connection? While there are deployment models that will reduce these risks, they will also impact the project cost.

Ultimately, your service levels for virtual desktops should be better than your current service levels for physical desktops. This can be achieved when your virtual desktop environment is designed around a dynamic desktop running on solid-state hardware.

4) Design for Success

Network. Start with your network! The network will be a defining factor in your final design, so it’s critical to have network staff involved at all stages. Even if your core team designs for performance, if your network can’t deliver your customers will see a drop in quality. Constant monitoring of network performance during the pilot can help eliminate future issues. On a positive note, the demand placed on networks by virtual desktops has declined significantly in the last few years, due to the rapid adoption of mobility platforms along with virtual desktop performance tuning.

Architecture Models. In setting up a virtual desktop initiative, schools can choose from several deployment models, each with significant pros and cons:

- **Single infrastructure:** In this model, the infrastructure is deployed for a single function: desktop virtualization. The system can be split into segments—one for student com-
puting, for instance, and another for administrative functions. While resiliency can be built into this design to address the failure of a hardware component, the impact of a total failure of the system would be significant. Simply put, if the virtual environment supporting 3,000 student desktops fails, it’s time to start polishing your résumé. To prevent this from happening, you must have highly skilled staff to monitor the systems along with virtual desktop/application performance. On the plus side, this model of deployment offers a lower cost of ownership than the private cloud model (see below).

- **Private cloud**: This model will significantly reduce your risks and allow you to mix the administrative and student virtual desktop resources with a high level of fault tolerance. The challenge to deploying this model is cost—and the need for facilities and experience. To deploy a private cloud, the core infrastructure must reside in two or more data centers, and the staff must have experience in balancing these cloud resources. While the cost is higher, it’s certainly not double that of the single infrastructure model. In the event of a catastrophe, although performance might be diminished, customers would still have access.

- **Hybrid cloud**: This model utilizes virtual desktop endowments delivered via a hosted provider. It’s a relatively new approach and is typically priced on a per-desktop, per-month basis. Use of a hybrid model would alter your internal hardware needs while at the same time significantly impacting your network distribution and bandwidth requirements. While the hybrid model has gained some traction in certain industry sectors, it’s rare or unknown in the education sector other than in distance learning or specialized application training. One important proviso: While your school would not manage the core infrastructure under this model, if the...
service were to go down you would be at fault, not the provider.

**Endpoint Devices.** Establishing standards for the endpoints is just as important as the core infrastructure. Plus, sticking to these standards through the first phases of pilot and production will greatly simplify your project. These device standards establish a baseline for deployment based on the actual chipsets. In the last year, major breakthroughs have enhanced device and video performance. As with everything else, many options are available—including BYOD for students. The typical endpoint options are:

- **Client-access software:** Students and faculty use their own devices, provisioned via a software application.
- **Zero clients:** Also known as ultra-thin clients, these typically use an all-in-one solid-state approach that boots directly to the virtual desktop environment. These devices are also available without the all-in-one design.
- **Thin clients:** A solid-state device that has additional capabilities along with performance enhancements—video, local memory, and expansion bays. Many of the new zero clients are also adding these features.
- **Provisioning of existing desktops:** This approach uses existing hardware to boot directly to the virtual desktop environment. It’s a good way to extend the life of older desktops that lack the resources to run newer operating systems or applications.

**Backup Systems.** Do not overlook the impact that a virtual desktop environment will have on your backup and recovery systems. Take the time to identify what will be backed up beyond the servers supporting virtual desktops.

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**Link Alander** is vice chancellor and CIO of Lone Star College System, the largest institution of higher education in the Houston area.
Before you sign on the dotted line, make sure your school has sorted out the legal aspects of any cloud-service contract. Here are six areas to consider. **By Dian Schaffhauser**

**WE’VE ALL HEARD** vendors extol the benefits of their cloud services: efficient, easy, cost-effective, and fast. What’s not to like? But before your school dives headlong into uncharted waters, be sure your legal team scans for any hazards that may lie beneath the surface.
It’s easier said than done—from a legal standpoint, the water is pretty murky. For starters, the laws are still evolving. Much about cloud computing “is new stuff,” says Justin Bathon, an assistant professor in the department of Educational Leadership Studies at the University of Kentucky. “In other areas of education law there have been years of litigation, so you have a pretty good base from which to predict how new things will be handled.” With cloud services, on the other hand, technology can be way ahead of the law. “It’ll take three or four years [for the law] to finally catch up with the actual technology problems we’re having today,” he continues.

Complicating matters further is the fact that many colleges and universities are public entities, governed by state codes that are enormous in scope. Yet the number of lawyers available to public institutions is very limited, especially compared to equivalent-sized corporations. The general counsel office at UK, for example, has just four or five people representing a $2 billion organization with tens of thousands of students. As a result, says Bathon, only “a handful of people at any moment are up to speed on the legal issues.” Not surprisingly, the crush of legal work can put public institutions at a disadvantage when it comes to tackling the myriad legal aspects of cloud computing.

This pressure makes it all the more important for legal teams to take the time needed to negotiate cloud contracts properly. Get the contract right, and the legal team can move on to more pressing matters. From a legal perspective, dealing with cloud-based service providers is “almost all contractual, frankly,” says attorney Adam Chase of the law firm Dow Lohnes. “Your legal relationship with a vendor is governed by a contract.” In fact, Chase likens the use of cloud services to a form of outsourcing: The school is “having someone else do something for it that it used to do itself, and it gives up a bit of control.”

Fortunately, outsourcing is something that’s been around for a long time, so the legal groundwork has been laid for at least some aspects of cloud contracts. But there are still plenty of issues in legal limbo to keep lawyers up at night. Here, we examine six common contract concerns and how schools might address them.

1) Boilerplate Contracts
A lot of service providers want to use their own contracts. No modifications required—just sign on the dotted line. But should you? Schools need to remember that vendor contracts are designed primarily to protect the vendor rather than the customer, and probably need some modification to serve both parties. As Bathon explains, a good contract should ideally pass on to the cloud-service provider “all the regulatory responsibilities that a public [school] would feel.”

Unfortunately, that’s often not the case. Given small legal staffs and the inevitable fires that break out on a day-to-day basis, notes Bathon, many schools have little time to “negotiate a contract, so [they] go with whatever terms of service a cloud provider has.”

As a result, the school is “taking responsibility that the private company will protect the data.” If the data is trifling, this may be OK (think student clicker responses in class). But such an approach is woefully inadequate in situations requiring more stringent security.

“We frequently have contracts with the Department of Defense and NASA where security is really essential,” explains Bathon, adding that concerns go well beyond government data. “We’re also a healthcare institution. We’re in a lot of business categories these days where the cloud is a really important part of what we do. From a CIO standpoint, putting maximum attention on data security is really important.”

The only way to achieve the necessary level of security is to push for modifications to a vendor’s boilerplate agreement. If you’re a big enough customer, even the largest providers—Amazon and Google among them—may agree
to contract customizations for certain services. If you’re a small school without a lot of clout, smaller vendors are more likely to modify their contracts to win your business. This option comes with a footnote, however: Even if the contract terms are favorable, schools must ensure that the vendor also has the resources to stay on top of security matters.

“If you’re a large provider such as Blackboard, you’re going to do everything in your power to make it as secure as possible,” Bathon notes. “My concerns would be around a startup company being able to go above and beyond.” That’s not to say schools should avoid smaller companies—far from it. But IT and the legal team must do their due diligence first. “It’s something that needs to be addressed before you can move forward,” advises Bathon.

2) The Middleman Dilemma
One of the most compelling selling points of cloud services is 24/7 support, especially since many institutions now have global presences with international students working at all hours. Not surprisingly, says Chase, schools want service-level agreements that provide for the maximum amount of uptime. The gold standard of SLAs is known as five-nines, or an uptime of 99.999 percent. Slap that in the contract and you’re good to go, right?

Unfortunately, cloud-service providers often act as middlemen. They might contract with a separate company to run the server farm that hosts their services. As a result, vendors might push back against a contract demand for five-nines uptime. For example, a company might say, “Amazon owns the pipes and operates the servers. We’ll give you what Amazon gives us, but we can’t give you any more than that.”

If this sounds like a reasonable response, you’re not an attorney. While Amazon is a first-tier provider with a solid reputation, it’s not a school’s obligation to police a vendor’s suppliers. According to Dow Lohnes’ Chase, “Our answer to the service provider might be, ‘If your vendor is not working, that’s your problem. But if your service isn’t living up to the terms of our agreement, we’re going to come and look to you to make it right.’” So adding a five-nines clause to the contract just might be good sense.

3) Data Rights
A lot of colleges and universities are weighing whether they can—or should—store sensitive student data in the cloud. If a school decides to move forward, Chase recommends that any contract include a confidentiality provision stating “it’s [the university’s] data and even though it’s technically in your possession, you shall not disclose it without our prior written consent.”

Schools may want to go one step farther by also specifying exactly where their data should be stored—an especially important consideration for FERPA- and HIPAA-related data. In the early days of cloud services, customers discovered that their data might be stashed anywhere on the globe. Now all the big boys—Amazon, Microsoft, and Google—as well as smaller companies allow customers to specify in what region they want their data stored.

“If you say, ‘We want to store data domestically with the vendors our clients have worked with,’ they can do that without much heartburn,” notes Chase.

4) Data Security
One of the most common arguments for shifting applications to the cloud is security: The largest cloud providers have far more security resources than any individual university, and consequently can provide better protection against the most frequent security ailments. It’s unlikely, for example, that these companies are tucking misconfigured networked servers into office closets, or taking customer data home on a laptop or USB device. These were just some of the causes of the data breaches that afflicted 87 institutions of higher ed and university-affiliated health centers or hospitals in 2012, as reported by the Privacy Rights Clearinghouse.

At the same time, don’t believe that shifting data storage to the cloud will solve all your security woes. In some ways, it’s like jumping from the fat into the fire. Cloud providers are increasingly becoming the target of major hacker and denial of service attacks, simply because that’s where the data resides.

Plus, researchers are uncovering the existence of potential
vulnerabilities introduced by cloud customers themselves. The Cloud Security Alliance, an organization that promotes best practices to provide security assurance within cloud computing, published a report in February that shares a “notorious nine” list of potential threats.

At the top of the heap? Data breaches. Last year, for example, researchers described how a virtual machine could extract private cryptographic keys being used by virtual machines on the same physical server. Likewise, if a multitenant cloud-service database is poorly designed, a flaw in one client’s application could be exploited by an attacker to gain access to another client’s data. So don’t assume that the cloud is airtight: Legal considerations about data security need to be directly addressed in the contract. The agreement should specify in some detail “how data is encrypted, how data is stored, and how data is transmitted,” advises Chase. “You can get very weedy very quickly on that sort of thing.”

Not all attorneys have the technical chops to get this language right. Be aware that a cloud agreement is a bit like a marriage: It’s no fun sticking around if things go south, but “getting out is messy too.”

At the top of the heap? Data breaches. Last year, for example, researchers described how a virtual machine could extract private cryptographic keys being used by virtual machines on the same physical server. Likewise, if a multitenant cloud-service database is poorly designed, a flaw in one client’s application could be exploited by an attacker to gain access to another client’s data. So don’t assume that the cloud is airtight: Legal considerations about data security need to be directly addressed in the contract. The agreement should specify in some detail “how data is encrypted, how data is stored, and how data is transmitted,” advises Chase. “You can get very weedy very quickly on that sort of thing.”

In Batson’s view, a good contract is an insurance policy for the inevitable. Data breaches are going to happen, he says, whether the data is maintained on campus or off. From a university’s perspective, the important point is “contractually making sure that each party is held responsible for the security, then figuring out where the liability lies” when a security incident occurs.

Chase recommends that the school attorney reviewing the cloud contract “work in close collaboration with IT and security staff.”
5) Remedies and Breakups
When a vendor suffers downtime beyond what's allowed under the contract, it typically offers service credits as compensation. “That’s the first thing vendors typically propose to remedy a service issue,” says Chase. That’s fine as far as it goes, but the contract should also allow a school to terminate the agreement if performance continues to be poor. Just be aware that a cloud agreement is a bit like a marriage: It’s no fun sticking around if things go south, but “getting out is messy too,” according to Chase.

Schools often need transition help to get disentangled from the first vendor and moved over to a replacement. For that reason, Chase recommends including transitional covenants into cloud agreements. “It’s sort of like talking about a divorce before you get married,” he explains. “OK, if this doesn’t work out, let’s talk about what we’re going to do.” Typically, a transition provision lays out at a fairly high level what the data formatting will be, and how and when the data will be returned to the customer or to the new service provider.

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6) Rogue Agreements

The beauty of the cloud—its simplicity—can also be one of the biggest burdens for IT: Faculty or staff decide it’s easier to work directly with a cloud-service provider than with campus IT. It can happen with everything from learning management systems to data storage for research projects. And all too often little or no consideration is given to the contract.

The problem is particularly acute among faculty, says Bathon. “The transition to cloud-based learning is really happening classroom by classroom, based on however the instructor deals with it.”

He cites an online quiz as a classic example. “There are lots of ways I could give an online quiz as an instructor—many of the most efficient ones are in the cloud. I can run that online quiz through SurveyMonkey or Google Forms. From an instructional standpoint, Google Forms is wonderful. But as an instructor, I don’t know how secure that data is.” Plus, he adds, it’s simple to lose control of the data “because forms are shareable.” Once a form is shared with one person, such as a co-instructor, he “might share with the whole world. It’s tough to maintain a lid on security in these types of spaces.”

Banning the use of unapproved cloud services is not a good idea, though. What’s required instead is education. CIOs need to speak to faculty, researchers, and business managers to help them understand the risks of single-handedly choosing cloud services. “All universities want instructors to be innovative, use the latest tools, and teach in the best way they know how,” Bathon points out. “Very few of our universities are talking to instructors about data security and protecting students in the cloud. It’s a really difficult challenge going forward.”

Dian Schaffhauser is a senior contributing editor of Campus Technology.
A NAC for Success

Even as schools strive to keep their networks and school data secure, they also want students to have a carefree, Starbucks-style wireless experience. NAC can help.

CONTROLLING ACCESS to a college network is like being the parent of a teenager. If you’re too strict and enforce a ton of rules, your teenager will hate you and run off with the pizza-delivery guy. Too lenient, on the other hand, and she will wrap the family sedan around a tree at 2 a.m. Schools, like parents, need to find the sweet spot where everyone is both happy and safe.

Increasingly, schools are utilizing network access control systems to help them establish that sweet spot. NAC has been around for a decade, but it only became an IT buzzword with the proliferation of BYOD. Gartner anticipates a NAC market growth of approximately 63 percent in 2013 alone.

NAC is a security solution that authenticates users and determines what they can see and do on a university network. It’s a vital control to protect sensitive information. But make no mistake, NAC won’t do the parenting for you—it simply makes it easy for you to set the boundaries of what’s permissible. And like parents, campus administrators often disagree about how strict to make the rules.

Control: Less Is More

“We still encounter IT technicians who think it’s appropriate to have the same control as a bank or a hospital,” says Kim Cary, chief information security officer at Pepperdine University (CA). “This just isn’t so.” In Cary’s view, faculty and students are going to use whatever devices they want, so the question becomes: How much are you willing to support?

“With three times as many devices and three times the load of three years ago, it all comes down to pushing security back,” explains Cary, who believes schools have to be flexible with new types of devices, such as tablets, smartphones, game consoles, and even multifunction copier-printers.

A more permissive approach like Cary’s appears to be prevailing over Victorian attitudes of strict control. Many schools, focused on giving their students and faculty a better user experience, are looking for fewer—but smarter—security controls.

A case in point is the State University of New York’s Fashion Institute of Technology. Before the school imple-
mented Aruba ClearPass, it was “tortured” by its previous NAC solution, according to Gregg Chottiner, FIT’s vice president for IT and CIO. “It would interrogate students” to confirm they had the required service packs (updates, fixes, and enhancements), he recalls. “It became a customer-service nightmare.”

Now the institute registers each device just once, and doesn’t check for A/V or service packs. “Nine times out of 10, the student is just trying to get to the internet,” Chottiner explains, “so we created a policy that everybody registers but we don’t interrogate them. Our current NAC wraps everybody to the internet.”

For many schools, the goal is to give students a wireless experience akin to what they get at the local coffeehouse. “Our students don’t need to put in a password after they’re registered,” says Chottiner of the new NAC system. “They just open up and they’re on, like at Starbucks.”

The system knows the device, and knows where they are on campus.

It’s a similar story at Pepperdine, where an information security team selected Bradford Networks as the school’s NAC solution. “We know who is accessing the network and what kind of device they’re using,” notes Cary. “For users, it should be as easy to get on as when they’re at Starbucks or McDonald’s.”

In the event that students don’t have a seamless Starbucks-style experience, NAC can help IT resolve the problem fast. Prior to installing ForeScout’s CounterACT, for example, New York Law School struggled to pinpoint network issues. “If a trouble ticket was issued, our desktop team had difficulty in quickly identifying the system, the location, and the potential security issue,” recalls technical director Peter Trimarchi. The result was a heavy workload for the help desk, staff redundancy, and student complaints about access.

But NYLS didn’t rely solely on ForeScout to resolve the problem. In fact, it coupled its NAC solution with a decidedly low-tech strategy: It launched an orientation program for students to teach them the ins and outs of technology use on campus. “Now that we’ve instituted the first-week technology orientation, we often don’t hear from students after the first week of school,” says Trimarchi, adding that NYLS has experienced a “huge drop” in the number of complaints about wireless issues.

Role-Based Access

Giving students an easy on-ramp to the internet is nice, but it’s certainly not the whole story. University networks are also the gateway to sensitive information that some users need to access—but most users don’t. “We didn’t want a guest scanning the president’s computer,” says Cary, “but we wanted guest registration to be smooth and
easy, with appropriate but limited information."

FIT’s Aruba ClearPass solution provides role-based authentication and application-based management. “We give [students] only the access they need,” Chottiner explains. “We can say that Facebook won’t be available during school hours. We can turn it off, then turn it on again. In other words, we can drill down to the actual application. We can also turn applications on and off based on role. Our students and faculty have different access, but the experience is as seamless as possible for both.”

While role-based access is a key security component, it handles only one aspect of the threat faced by colleges and universities. IT systems must also be able to identify vulnerabilities and quarantine devices that are not secure. In addition to role-based device authentication, for example, NYLS established a virtual private network policy for its faculty and staff. “This allows us to know if a device has a secure connector installed, along with antivirus and Windows updates,” says Trimarchi. “If it does not, access is immediately relegated to a separate mitigation VLAN [virtual local area network]."

Simply kicking a device off the network may eliminate a security risk, but it’s unlikely to win IT any friends among its customers.

Simply kicking a device off the network may eliminate a security risk, but it’s unlikely to win IT any friends among its customers.
immediately and tell them what to do. Now, after network access control, the system puts up a page to say that between an Xbox and an iPhone, and can manage all devices. “They all have unique signatures,” notes Chot-tiner. “If a mobile device is infected...we can segment the device and get it off the net-work, then have that person come in for tri-age and remediation.”

NYLS uses an auto-mated e-mail notification to alert students and faculty if their devices contain mal-ware, along with the steps needed to fix the problem. “We’ll soon be taking advantage of more advanced self-remediation and auto-remediation techniques,” adds Trimarchi. CT

**Toni Fuhrman is a writer and creative consultant based in Los Angeles.**
Can Windows 8 Play With the Big Boys?

While Windows 8 trails badly in the number of apps it supports, it has two big advantages: Microsoft’s productivity tools and easy integration with enterprise systems.

**WHEN IT COMES** to mobile, Microsoft clearly wasn’t. While Apple and Google were carving up the mobile market with their iOS and Android platforms, Microsoft was nowhere in sight—at least not until last fall when the company released its Windows 8 operating system. “Better late than never” goes the saying, and it does appear that the outlook for Microsoft’s mobile efforts is looking up. According to market research firm Strategy Analytics, Microsoft increased its share of the worldwide tablet market from zero last year to 7.4 percent in the first quarter, with 3 million Windows 8 tablets shipping during the quarter.

In a competitive race where apps serve as jet fuel, though, Microsoft’s late takeoff makes the climb that much harder. While Apple’s app store boasts around 900,000 apps and Google’s 700,000, the Windows Store has only about 80,000 apps to its name. So why would students and faculty choose a Windows 8 tablet over its more established rivals?

**Legacy Tools**

For starters, a single-minded focus on apps loses sight of what makes Microsoft’s mobile offering appealing in the first place: The company brings to the game a suite of productivity tools that most faculty and students have used all their lives. It’s an advantage confirmed during iPad and Android pilots conducted at Seton Hall University (NJ) over the past few years. When the school surveyed students after the projects, they said they liked the form factor of the tablets but needed access to Microsoft Office applications to be productive. “We could offer them Documents to Go or other workarounds, but they definitely wanted that access to Office,” says Michael Soupios, associate director of the school’s Teaching, Learning and Technology Center (TLTC).

This student preference played a part in the school’s decision to join Microsoft’s First Wave program of early adopters. Along with the University of Washington, Seton Hall was among the first in higher education to deploy Windows 8. In June 2012, the school gave 500 freshmen Samsung Series 7 Slates running Windows 8; then, in September, it gave them to 500 juniors as part of a technology refresh. Extensive surveys asked students about their impressions.

The number of students who reported negative impressions of Windows 8 was fairly small, around 12 percent.
“The students liked that it is instant-on like an iPad, instead of having to wait for a desktop PC to boot up,” Soupios says. More than 16 percent of freshmen described their experience with the operating system as much better than with Windows 7. More than 37 percent said somewhat better, while about 30 percent felt it was about the same. The numbers for juniors were similar.

Comments from students included:
- “The new Windows 8 is modern and interactive. However, I prefer to use a laptop instead of a tablet because I dislike using a touchscreen tablet as a substitute for a laptop.”
- “I like the idea of the app live tiles, but the apps themselves are disappointing and not easy to use.”
- “I like the home screen and the accessibility of it. I also like the apps and how accessible e-mail is.”

Seton Hall also queried students about their impression of the apps available in the Windows Store. Approximately 25 percent of students were either dissatisfied or very dissatisfied with the Windows 8 apps. “At the time, the store had only something like 50 apps,” Soupios recalls.

“We knew that was going to be a problem, but it has gotten better, although still nowhere near Android and iTunes.”

Paul Fisher Jr., associate CIO and director of TLTC, is under no illusions about the challenge facing Microsoft. The company, he says, “has to up the ante to jump over Google and Apple,” and his first impressions are that Microsoft has done a fantastic job technologically.

Spicing Up the Secret Sauce

With Windows 8, Microsoft has taken a cloud-based approach to data. Students can log into their Microsoft account and SkyDrive from any device to access their documents and e-mail. It’s an approach not dissimilar to that of Apple’s iCloud, and in many ways Microsoft is taking Apple’s secret sauce and trying to kick it up a notch: the utility of the cloud, the hipness of the iPad form factor and apps store—but topped with the rich productivity tools that students and faculty know so well.

Microsoft believes it has another competitive advantage because Windows 8 is an operating system that is not restricted to mobile devices. According to Cameron Evans, chief technology officer for Microsoft’s US Education group, customers are also interested in desktops with touch capabilities, and many schools are looking to refresh old monitors with touchscreens for use with Windows 8. “You can have a first-class experience with them with mouse and keyboard or touch,” he says. “We say let the context of the work dictate how you use it.”

It’s an approach that Pace University (NY) hopes will work. The school has installed Windows 8 across its computer labs, and additional pilot projects are under way. Eventually, Pace expects to deploy Windows 8 across 10,000 desktops and devices. According to Larry Robcke, manager of client support, decisions about when to deploy technologies such as Windows 8 are student- and faculty-driven. “Faculty started asking us when they could start using this new technology in classrooms and students wanted to see it in the labs,” he reports.

Based on Pace’s experience, Robcke says Windows 8 is definitely quicker than Windows 7 at startup, which users really like. “We haven’t discovered any major issues or hurdles in our testing yet, but we do have a few custom applications developed internally that require some programming work.”

Pace’s decision to go with Windows 8 may have been driven by faculty and students, but at many other institutions the loudest cheering for Windows 8 is coming from the IT department itself—for entirely different reasons.
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Simply put, Windows 8 is easier—and cheaper—to integrate into enterprise systems than other mobile operating systems. This was a major factor in Southern Illinois University’s decision to issue 2,500 Dell Latitude 10 tablets to students this fall after considering both iPads and Windows 8 tablets. “We compared the two platforms, and no doubt the campus would have been more excited with the iPads,” says CIO David Crain. “Yet not only will the Windows 8 devices plug into our enterprise architecture and have better technology specs, such as more RAM, faster processors, et cetera, but it will also be less expensive for the university.”

By going with Windows 8 tablets instead of iPads, SIU estimates it will save $3 million in total cost of ownership over the four-year contract, not including what a third-party mobile device management (MDM) solution would have cost. “Apple did not offer any kind of deep discount, while Dell allowed us to leverage volume purchasing to give us aggressive pricing,” Crain says. “They also offered a better warranty with no deductible. Apple wasn’t willing to go as long on the warranty and had a more limited warranty.”

Concerns about MDM were also a major consideration at Seton Hall. “We thought about this during our iPad and Android tablet pilots in 2010 and 2011,” Fisher recalls. “How would we manage them? That was when we realized that, with our Microsoft network infrastructure, we don’t need a third-party MDM

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solution [to handle Windows 8 tablets]. We can use all the services we already have. That was a real bonus from an IT standpoint—we can manage these devices like we do every other PC on campus. It was the icing on the cake."

But what about the student experience? Have SIU and Seton Hall put the cart before the horse? In the view of SIU, providing students with access to desktop applications they have always used is important. During a pilot this spring with 300 students, Crain says, “We had a few network hiccups and problems with Office 2010 not working well in a touch environment.” But with Office 2013 being loaded onto all devices this fall, Crain expects this problem will be resolved, and there were no compatibility problems with any university applications.

One other factor influenced SIU’s decision to go with Windows 8: The school is a big user of Pearson’s MyLab. When the school was comparing tablets, an iPad version of the program didn’t exist. A stripped-down version is now available, says Crain, but the full version is available for Windows 8.

Even so, among trend-conscious students an iPad is an iPad. So it’s not altogether surprising that SIU has received some pushback from students who feel the decision to go with Windows 8 is more about business efficiency than student preferences. Students have complained about the Windows Store, for instance, especially in comparison to iTunes.

But Crain believes that the gap between Apple’s and Microsoft’s offerings will narrow over time, helping smooth away any student discontent. "I am impressed that the top 50 apps in the iTunes App Store are all in the Windows Store," he says. "There are something like 80,000 apps in the Windows Store now and it is growing."

David Raths is a freelance writer based in Philadelphia.
CONGRATULATIONS TO our 2013 Campus Technology Innovators! Out of a total of 235 entries, nine honorees rose to the top in six categories: Education Futurists; Teaching and Learning; IT Infrastructure and Systems; Student Systems and Services; Leadership, Governance, and Policy; and Administrative Systems. These IT leaders have found innovative ways to tackle tech challenges large and small, and really make a difference on their campuses. Worthy of recognition, too, are the vendors and products that help make these projects a reality.

Our thanks to the members of our Innovators Judging Committee (see “Meet the Judges,” page 46), as well as all who submitted nominations this year.

We are especially pleased that C'T's digital format allows us to share videos, slideshows, and links to Innovator-related resources. Read on and enjoy!
MASSIVE OPEN ONLINE courses have been both hailed and lamented as a disruptive force in higher education. At a time when many universities are still trying to determine where they fit in the MOOC landscape, San Jose State University (CA) had the vision to become the first university to combine MOOC content with college credit.

Starting about a year ago, under the guidance of project lead and provost Ellen Junn, SJSU began exploring MOOCs as a means to alleviate bottlenecks in high-demand remedial and gateway courses, as well as to improve the outcomes of courses with high failure rates. The university partnered with edX to pilot materials from edX 6.002x, an MIT course on Circuits and Electronics, in SJSU's own Introduction to Circuit Analysis course. In a flipped model, students were assigned the edX video and quiz content as homework, with class time used for teamwork and problem solving. Students were charged the standard state fee for enrolling in the course.

SJSU also initiated a partnership with MOOC provider Udacity to offer three credit-bearing online courses: Remedial Math, College Algebra, and Elementary Statistics. Each Udacity course has 100 paying students (led by an SJSU instructor) and about 4,000 free and separate students who learn on their own. As the enrollment rates expand, the class sizes can be easily scaled upward, allowing the university to keep up with course demand while boosting student engagement and success.

The MOOC content is based on active learning concepts, with students viewing short sequential videos interspersed with quiz questions. Knowledge is built in small steps until complex, difficult material is learned. SJSU administrators report that the format is personal and engaging, with up-close tutorials and real-life problem solving to compel students’ attention.

The administrative and course management systems on campus adapted to the new scenario: PeopleSoft, the student information system, continued to function as usual for registration. The CASHNet eMarket system from Higher One allowed student payments to be processed quickly. And faculty continued to have access to Instructure’s Canvas, the campuswide LMS, for grading and communications.

The piloting of MOOCs for credit on the SJSU campus is generally bringing observable, positive results. Catheryn Cheal, associate vice president and senior academic technology officer, comments: "Investing in carefully creating an intensely engaging MOOC with increased human mentoring may make it possible to scale the classroom to much larger numbers of students without reducing the quality of the individual student learning experience and without overburdening the faculty. The adoption of a MOOC model for gateway courses will make it possible to offer these courses..."
at an enormously reduced cost due to economies of scale. A MOOC model can become very affordable to all students.”

As for the future of MOOCs at SJSU, Cheal notes: “Our next steps will be to fully assess the learning outcomes of the courses and then to develop more with edX and Udacity and work through any remaining issues. We will also be establishing a center for helping other CSUs and universities use the MOOC content in a flipped model.”

TEACHING AND LEARNING

Rochester Institute of Technology
Project: The Research Network
Project lead: Chandra McKenzie, assistant provost for academic affairs

**HOW DO YOU** discover researchers to collaborate with, even on your own campus? At large universities, many people are often working on similar problems in isolation, simply because they are not aware of who else might be doing related work in their own or other departments.

Researchers at the Rochester Institute of Technology (NY) think they have found an answer to that question by expanding the reach of a homegrown social bookmarking tool called RIT BookBag.

**TECH VENDORS/ PARTNERS:**
Developed in-house

Built with Drupal, the open source project allows users to share links with one another. Faculty members use BookBag to research course topics, share their findings with their classes, discuss resources with students, and involve students in discovering course content.

Now that it has been available for a year and a half and is gaining enthusiasts among the faculty, BookBag’s developers have launched phase two: the Research Network. The new tool allows people to find other individuals on campus studying similar topics and form their own groups to collaborate around specific subjects.

Likened to Pinterest for research, the Research Network automatically catalogs each web resource saved in RIT BookBag via natural language processing, and maps it to other web resources bookmarked in the system, explains Michael Riordan, one of the developers and a professor in RIT’s School of Media Sciences. By mapping who bookmarked a particular resource, the Research Network recommends similar resources and enables researchers to identify potential collaborators.

“The Research Network is a natural evolution of [RIT BookBag’s] phase one use in the classroom,” says project lead Chandra McKenzie, assistant provost for academic affairs. “We want to continue to figure out how this tool can help campus communities share resources. We don’t have specific goals in terms of numbers of users. We are now more focused on getting it into people’s hands and seeing how the use cases evolve.”

The original target group for BookBag was faculty working with undergraduate students in their classrooms. But
McKenzie believes faculty and graduate student researchers will find the idea of sharing resources intriguing.

Riordan notes that faculty members and students have gotten used to the idea of browsing content they have bookmarked in particular classes. “Now the system will start suggesting other people and content based on what you are looking at. You can just click a button and follow other people just like you can on Twitter,” he explains. “Once you follow people, the Research Network will suggest other people with similar interests just as Twitter does. The system is context aware.”

When users add content to a class BookBag, everyone in their class automatically sees it. So to address privacy concerns, the developers created an opt-out procedure. “We have created a way to use BookBag that is private,” Riordan explains. “You can have your own personal BookBag, with the option of sharing it with others or not.”

The software-development process was quite involved, says web developer Pat Reed. BookBag is fully integrated with RIT’s existing systems, allowing it to leverage single sign-on and link deeply into library-managed resources. “There are several IT systems tied in, especially library catalogs as well as RIT databases,” he adds. “It is tied into the student information system so that, when students log in, it creates a personal BookBag for them. It travels with them throughout their RIT careers, and then when they graduate there is a tool for them to export that data if they wish.”

In May, the development team exhibited the Research Network at the Imagine RIT Innovation and Creativity Festival, which brings 25,000 people to campus. At the festival, Riordan met a math professor interested in data visualization and social networks, and they both realized that they are doing research in overlapping areas. “Using BookBag’s research network would have helped us make the connection before now,” Riordan says.

That realization is echoed by one senior about to graduate, who told Riordan: “If I had had access to a research network during my time here, I would have used it to create connections with people who had skills or talents that I lacked, or hoped to acquire.” Another student said that the campus is very large and very much siloed by both location and discipline. “I could see this [Research Network] tool helping organic relationships develop that are both academic and career-focused.”

**Marist College**

**Project:** Open Academic Analytics Initiative

**Project lead:** Josh Baron, senior academic technology officer

In 2001, only 36 percent of US students who began bachelor’s degree programs were able to complete them within four years, according to the US Department of Education. A decade later, the statistics are still cause for concern: According to the College Board Advocacy & Policy Center, in 2010 the US ranked 12th in the world for percentage of individuals aged 25 to 34 possessing an associate’s degree or higher.

But higher ed is not taking those numbers lying down. The past 10 years has seen a big spike in initiatives surrounding learning analytics, with particular interest in the use of predictive models, “early academic alert” systems, and other programs designed to promote student success. From very early developments like Purdue University’s (IN) Course
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Signals project for early alerts and interventions (an Innovators awardee in 2011), to more recent, multi-institutional efforts like the PAR predictive analytics reporting framework project led by WCET, academic analytics has strong and growing research and community involvement.

While national efforts by institutions and associations have made progress in addressing the challenges of student success and degree completion, Marist College (NY) saw a need for an open ecosystem of analytics tools and resources. In 2011, Marist launched the Open Academic Analytics Initiative, supported initially by an Educause Next Generation Learning Challenges grant (funded in part by the Bill & Melinda Gates Foundation) and now maintained and furthered by the college. One of OAAI's main goals is to research the “portability” of predictive models, to create tools and resources that are applicable in diverse educational environments.

The OAAI system mines three historical data sets: student aptitude data, learning management system event-log data, and electronic gradebook data. Through a predictive model scoring process, the early alert system identifies at-risk students and allows instructors to deploy interventions to help those students succeed. Interventions can include awareness, tutoring, or online educational resources within the Open Academic Support Environment.

OAAI's own development work is created using a fully open strategy: leveraging open software and resources, and creating a completely open learning analytics solution. OAAI's predictive model is available to other institutions under an open license, and all the system documentation and data integration flows have been released under open license. The initiative has a Sakai wiki page dedicated to the project where people can access all of the open materials, including the OAAI predictive model.

Corporate partners were selected for openness as well: Pentaho was chosen for its open source business intelligence tools; Sakai, the community source collaboration and learning environment, was selected as an open platform for OAAI, including rSmart technical support for Sakai. (rSmart's Sakai business is now owned by Asahi Net International.) IBM's SPSS was used to confirm analysis and to conduct technical testing.

Josh Baron, Marist's senior academic technology officer and OAAI project lead, reports, “Initial research findings have been very encouraging, showing statistically signifi-
cant improvements in course grades and content mastery levels among those students in courses using the system.”

One of the unexpected results Marist encountered relates to its study of the portability of the predictive model. “Given how dissimilar Marist is from our partner institutions, we were surprised to find that the model remained very accurate,” says Baron, “which suggests that models could be used across a broad range of institution types—though we are working to customize models for specific types of institutions in hopes of even further increasing the accuracy.”

I.T. INFRASTRUCTURE AND SYSTEMS

Lane Community College
Project: Automated Lighting System
Project lead: Alen Bahret, programmer/analyst

LANE COMMUNITY COLLEGE in Eugene, OR, needed to fix a problem: how to coordinate two different scheduling systems for its sports fields so that planners weren’t doing double entry. In developing a homegrown solution, however, the school also created a new source of revenue and an approach to solving other facilities scheduling challenges on campus.

In November 2008, voters in Eugene approved a bond measure for projects to improve the LCC main campus’s athletic facilities, including a new soccer field, new turf in the track and field area, and installation of eight new field light stands. The school contracted with Iowa-based Musco Lighting to provide the lighting systems as well as remote scheduling of automated lighting with a product called Control-Link.

The bond-approved lighting system came with additional responsibilities, says Alen Bahret, programmer/analyst at the community college. “We had to manage lighting schedules for our athletic department’s events as well as those of community groups and high school teams using the facilities.”

LCC already was already using an event scheduling system, 25Live from CollegeNET. With the addition of lighting scheduling, athletic team coaches now had to do double-booking, reserving space through the 25Live application and then scheduling lighting in Musco’s system. If an event scheduler forgot to enter information requirements into both systems, Bahret explains, “the group would get to the event and find a dark field.” That would require a phone call to a facilities person, who would then go into the lighting scheduling system and turn it on. The lights have a 30-minute warm-up time, so the group would have to wait around until the system powered up.

“I got to thinking that perhaps we could build something so we do the scheduling only once, and it would be a self-managed process,” Bahret says. He talked to Musco and CollegeNET executives about how to create an interface between their two systems.
During the summer of 2011, Bahret worked with CollegeNET to integrate all of the college’s event lighting requirements into a single database. Then he worked with Musco to create an interface enabling all event lighting times to be scheduled through 25Live.

Musco officials told him that LCC could send a flat file in comma-delimited format. “So we just had to arrange for that data to come out of the 25Live system,” he explains. Because it is an on-premises system rather than software as a service, the change didn’t require CollegeNET to do any reprogramming. “We just had to go into the Oracle database and pull information from certain fields and ship it to the Musco server once every hour.”

The new interface didn’t involve extensive setup or any equipment expense, Bahret notes. The challenge, he says, was mostly in developing the concept to make the products from the two vendors work together. “We tested it for six weeks and ran it in parallel with the old business process of double entry before launching it,” he says.

The updated system, which went live in October 2011, includes a choice of three lighting resources (soccer field, track infield, and whole track) and three lighting time options (sunset, sunrise, or actual event time).

LCC hasn’t tried to estimate cost or energy savings from the interface. But because the scheduling is streamlined, more community groups are able to define specifically when they want the lights on and off.... We charge by the hour and bill accurately, and the lights go out quickly after groups leave the fields.”

—Alen Bahret, Lane Community College

“We can define specifically when we want the lights on and off.... We charge by the hour and bill accurately, and the lights go out quickly after groups leave the fields.”

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to use the fields and LCC earns more revenue by charging them for their time and share of lighting used. The pricing for the lighting, playing field hours, and scoreboards are all packaged together. “We can accurately share costs with others using the fields and we can define specifically when we want the lights on and off,” Bahret says. “It has allowed us to build tight schedules. We charge by the hour and bill accurately, and the lights go out quickly after groups leave the fields.” Now coaches can view space and event details and see whether lighting has been scheduled from within 25Live, without even logging in to the Musco system.

Inspired by its success with lighting scheduling, LCC is moving to integrate other systems. For instance, it is planning to use 25Live scheduling to link to a space rental pricing and invoicing system. “We are working on doing the same thing linking our heating and cooling system and our class schedules,” Bahret says. “We already have created a web service that connects our class schedules to our Symmetry Security Management Software package. A message tells the security system when to lock and unlock each classroom.”

STUDENT SYSTEMS & SERVICES

Lone Star College System
Project: Education and Career Positioning System
Project lead: Michael Mathews, chief strategist for innovation and research

THERE ARE “very few means to help people position and navigate themselves against the landscape we call education,” says Michael Mathews, project lead and chief strategist for innovation and research at the Lone Star College System (TX). Technical and organiza-
tional barriers have traditionally kept students from accessing their own educational records and data (thanks largely to FERPA compliance issues), making it difficult for individuals to analyze their education and career options.

Recognizing the need to put sophisticated career-planning tools directly in the hands of students, parents, and advisers, Mathews and his team created the Education and Career Positioning System (ECPS), a suite of tools that analyzes learning records, personal traits, and individual abilities to help students choose potential education and career directions. Employers may also connect to the software to identify future graduates with relevant skills and goals. Leveraging proven analytics and security software, the system is designed to be approachable by individual, consumer-level users both technically and financially (the student license costs less than $50).

Mathews aligned the project with the US Department of Education’s “MyData button” in order to forge a national initiative that could impact the largest number of students. Dubbed “America’s first comprehensive education and career navigation system,” ECPS is designed to support all 80 million students in the American education system.

It’s easy for students to get started via the project website. From there, they can learn how to create a personal interest and experience profile, compare their profile to compatible jobs and careers, determine job outlook projections, and even view career salaries across multiple states. Using the System of Integrated Guidance and Information (SIGI) application and the Educational Data Vault (EDUVault), students own their portfolio, advisement, and guidance information potentially for life, with ongoing access to personal information stored securely in the system.

While the ECPS is still new, it is meeting a need that has been felt across the country. Deb Derr, a former career counselor and president of North Iowa Area Community College, remarks, “When students chart a clear course early in their college experience, they will move faster through their field of study.” But they also need time to investigate career options, she adds. “How do we address that need for exploration in a very effective, efficient manner, and provide students what they need to be able to make sound career choices?” Derr is one of more than 100,000 individuals who have tested and used the ECPS applications.

The ECPS suite relies on several software vendors and technology partners. Personal’s encryption algorithms protect sensitive information as user data is transmitted between browser and server. Valpar International’s wide range of assessment software contributes to the analysis of students’ skills and abilities. Smart Hires provides the unique connection between employers and students offered within ECPS. And the system is designed to meet IMS Global Learning Consortium standards—an important design aspect for interoperability both now and for the future.

What’s next for ECPS? Lone Star plans to market the system widely. But a critical aspect of maintaining and extending the system going forward will be the careful management of partnerships—especially protecting the IP rights.
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among all the vendors operating within the ECPS framework, while continuing to manage its partnership with the Department of Education. Mathews observes: “A disruptive technology like the ECPS will need to be managed with care as well as through the right partnerships that ensure a sustainable model for success.”

University of Washington
Project: SpaceScout Mobile App
Project lead: Janice Fournier, research scientist

Some innovations can be attributed to the domino effect. For instance, the temporary closure of a large student computer lab at the University of Washington in 2009 led UW Information Technology to research what students wanted in campus study spaces. “We knew they have more laptops now, but we didn’t know whether they were bringing them to campus or whether we have the amenities to accommodate them,” recalls research scientist Janice Fournier.

Subsequent surveys and focus groups found that students were not aware of many spaces and resources available to them and were often frustrated in trying to find places that met their specific needs: for example, a study room for six with a whiteboard and nearby coffee. That research later inspired Fournier and a team of software developers to create a mobile app called SpaceScout, which helps students find appropriate study spaces on campus.

In January 2012, the Academic & Collaborative Applications team got $57,000 in funding from the Student Technology Fee Committee in addition to approximately $70,000 in in-kind donations of programmer and designer time from the IT department. By autumn 2012, a nine-person project team had delivered iOS and web-based apps to users. The team focused on an iOS version first because surveys revealed 75 percent of mobile devices on campus were iOS-based. Then the developers built the web app to make sure students without smartphones could still use the service.

SpaceScout allows any student with an iOS device or access to a web browser to search for campus study spaces by location on a map or by selecting type of space, capacity, hours available, whether or not the space is reservable, location, noise level, technology resources (e.g., projector), and proximity to food or coffee. Photos of each space help students choose exactly what they are looking for.

To get the project rolling, the team partnered with UW Libraries, Housing & Food Services, and computing directors to build a database of spaces and resources available to students. That was when the developers first appreciated the complexity of their task. “When we started collecting data in a spreadsheet, we realized that there was no consistency in how different groups labeled spaces,” says Fournier. They had to stop and create definitions of nine different space types.

“Creating the spaces taxonomy and gathering the data about spaces took longer than we had anticipated,” recalls Jason Civjan, user experience designer and project manager. “But now we have disseminated that taxonomy to the
administrative owners of the spaces, and they can refer to those definitions as they describe new spaces.”

The team developed SpaceScout in-house using open source tools such as Django, jQuery, and various plug-ins. The open source design means that other institutions can adapt SpaceScout to fit their own campuses and purposes. Indeed, the University of Illinois already has looked at ways it could use the web app and contributed some improvements to the code, Fournier says.

SpaceScout was the design team’s first attempt at building a native iOS app, which the developers described as a steep learning curve. One hiccup they encountered: a bug that didn’t appear until they compiled the app for submission to the Apple App Store.

SpaceScout has been accessed more than 6,000 times since its release in the fall. Last December, 98 percent of surveyed users said they would recommend it. But the SpaceScout team is not resting on its laurels: It’s focusing on a marketing plan to raise awareness of the app and increase the number of users. “We also are working on tools so administrators can edit their space information, see statistics about usage and what students are filtering for, and perhaps make adjustments accordingly,” Civjan says. In other words, information from the app on users’ habits will inform campus planners about the kinds of spaces students need most.

The developers are busy adding spaces from the UW Bothell and UW Tacoma campuses and integrating real-time data about availability in computer labs. Among proposed new features for 2014 include crowdsourcing, allowing students to rate and comment on spaces, and collaboration, allowing students to e-mail space details and invite others to a space. Another possibility is personalization, which would let students view spaces available to a specific group such as business majors.

The anecdotal feedback from students is encouraging, Fournier says. “Students say they are surprised at the number of spaces available,” she adds. “One said that she orders a latte at a campus coffee shop and while waiting in line, she uses SpaceScout to find a place to study before her latte is ready. Another said she is staying on campus between classes more often because now she can find quiet study spaces.”

Liberty University
Project: The Dissertation Portal
Project lead: Amanda Rockinson-Szapkiw, assistant professor and chair of doctoral research

As Liberty University’s (VA) online Ph.D. program in education has grown, so has the complexity of managing
the paperwork involved in tracking dissertation progress. With the program serving more than 600 students at a time, traditional e-mail correspondence was failing to keep up.

“So much got lost in the shuffle,” says Amanda Rockinson-Szapkiw, assistant professor and chair of doctoral research in the School of Education. “Documents and versions were hard to track.” Files were sent as attachments, saved to desktops, and sometimes lost. “Really annoying was when faculty members would spend time commenting on an older version of a dissertation, only to find that the student had addressed some of those issues already,” she says.

Administrators at Liberty, which bills itself as the largest Christian university in the world, were also well aware of the higher attrition rates in online graduate programs. They wanted a clearer picture of which department chairs were working with which students and where they were in the process. There was no easy way to see that information in a single view.

In 2010, the education school’s dean asked Rockinson-Szapkiw to study this problem and see if she could find an answer. “I started looking at technology solutions to help us increase retention rates, improve communication, and give us an administrative view of the dissertation process,” she says. What they needed, she decided, was a collaborative workspace. She started looking at Google Docs and WordPress but thought they lacked critical functionality, such as strong security controls and integration with Microsoft Word, which most of the graduate students were using. “Then another faculty member reminded me that the university’s existing campus agreement for Microsoft licensing already included SharePoint Server, although SharePoint hadn’t been used for educational purposes yet at all. So I ran with it.”

“Learned to run” with it might be a more apt description, since Rockinson-Szapkiw knew nothing about SharePoint and didn’t want to wait until the next budgeting cycle when she could hire consultants. Sniffing around the university, she found expertise and help from a student employee and a few members of the university’s faculty support group. Their day job is building courses in Blackboard, but they offered her some ideas on how to proceed. “I watched hours and hours of videos on Lynda.com about how to use SharePoint,” she recalls, “and then built it from the ground up.”

Rockinson-Szapkiw thought she was building a basic content management system, dubbed the Dissertation Portal. But, since its fall 2010 launch, when it housed documentation for the dissertation process, the portal has gradually developed into a shared workspace where Ph.D. candidates can collaborate with their peers. Each candidate now has an individual secure site to post his or her progress and collaborate with a dissertation committee. Users take advantage of discussion forums, document sharing, and multiple-person editing. Students post status updates that the administration aggregates to track progress of all students in the process. In addition, administrators get the dashboard view that they wanted, giving them more oversight of the process.

Since the portal’s inception, Liberty has sought to measure its impact. The college surveyed students before and after implementation, using a “doctoral student connectedness scale” that was designed to identify students at risk of...
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dropping out. The research found that use of the portal increased doctoral candidates’ connectedness by 9 percent as measured on the scale.

What’s more, the dissertation approval process time has been cut in half. “Documents aren’t sitting on one professor’s computer waiting for that person to finish looking at it before handing it off to another,” Rockinson-Szapkiw says. “On the portal, any committee person can go in when they have time, in any order, to comment. That concurrent review saves lots of time.”

Although the original goal was to improve workflow between candidates and faculty members, the collaborative nature of SharePoint is allowing the students to work together as they participate in discussion forums about topics such as research methodologies and how to do literature searches. A future goal is to create research teams in the portal that align with faculty expertise, so that students and faculty can naturally organize themselves around areas of common interest.

Melanie Dunn, a high school Spanish teacher in the Forsyth County, GA, school district, completed her Ph.D. at Liberty in 2012. “I found the organization within SharePoint most helpful,” she says. “All the documents I needed for IRB [institutional review board] approval and proposal development and approval were right there. It’s comforting to know that you and your chair are working on the same version,” she adds. “And both parties get an e-mail notification when a change has been made to the document.”

Dunn and her fellow students at Liberty may be on the ground floor of a wider collaborative dissertation community. Since Microsoft published a case study on the college’s use of SharePoint in August 2011, several universities have asked Rockinson-Szapkiw for consulting help on replicating aspects of the system.

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tional: “She said we’d need a solution in place [for restarting classes] if campuses had no power after the storm.”

Ritter-Guth immediately contacted her Blackboard support manager, Brett Nabb, for help. They needed to create a “shell,” a system by which students could access classes online through Angel, which was hosted offsite in Indianapolis. (While UCC had a small number of online students, most typically attended class at one of the school’s three campuses.) All classes, except labs, would now be delivered through Angel. If students couldn’t get to Elizabeth for classes, they could still attend online from any web-enabled device.

The pair worked through the night and by morning, it was ready. McMenamin again turned to Twitter to notify faculty that Angel was up and instructed them to send course content to Ritter-Guth for posting. By the weekend, all classes were in Angel.

Users soon hit a snag, however. Students trying to access the LMS from their mobile devices couldn’t get past the authentication wall. Nabb quickly created a “backdoor” that allowed students to circumvent the single sign-on step and get into the shell.

Angel became UCC’s primary communication system during the recovery period. Since the system was hosted remotely, it was more reliable than other communication channels. “Only Angel and the website stayed up without fail,” says McMenamin. In addition, the school used every possible system—Angel, website, SMS, e-mail, Twitter, and Facebook—to send updates. “At one point, the only way I could communicate was via Words With Friends chat!” recounts McMenamin.

Preserving UCC’s IT infrastructure was another challenge. All IT systems were housed at the storm-battered Cranford campus, which was now running on power supplied by diesel-fueled generators. If the generators failed, the school would lose its website and e-mail systems. Data loss would be catastrophic.

Diesel became the priority, says McMenamin, and facilities and public safety staff began scrambling to find fuel. Complicating the matter was the fact that gas stations throughout New Jersey were running dry. Thankfully, the school got its hands on a 55-gallon drum, which was filled with diesel from another campus’s reserves and transferred to Cranford.

UCC’s persistence paid off. By the end of the hurricane week, 85 percent of the faculty were working in Angel. One week later, 99 percent of the full-time faculty and 92 percent of the part-time faculty were in the system. Best of all, the completion rate for the fall was 75.4 percent, just 0.2 percent lower than fall 2011.

McMenamin credits her team for the successful recovery. “It was a collegewide effort,” she says. “My staff and faculty all stepped up to make this happen. It was my proudest moment at Union County College.”

“At one point, the only way I could communicate was via Words With Friends chat!” —Margaret McMenamin, Union County College

Administrative Systems

California State University San Marcos
Project: Strategic Class Scheduling
Project lead: April Grommo, director, IT Projects Office

With her institution facing two of the highest-profile issues in higher education—first, the push for degree completion and student success; and second, severe
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budget constraints coupled with increased enrollments—April Grommo, director of the IT Projects Office at California State University San Marcos, needed a way to achieve just the right balance of high-enrollment and elective courses.

Building on the university’s existing business intelligence and data analytics systems, Grommo forged a strategic class-scheduling process—a two-pronged approach that helps ensure degree-seeking students have access to the courses they need while producing new efficiencies to safeguard the university’s shrinking budgets.

The strategy begins with the university’s Oracle/PeopleSoft ERP, from which student data can be leveraged. Detailed student-level information outlines fulfilled and unfulfilled courses needed for degree completion. Through an implementation of the Academic Advising module in Oracle’s Campus Solutions, the university is able to initiate an analysis of aggregate course demand. A weekly batch process updates all student degree requirements and populates a series of database tables. After the data is extracted to a data warehouse, the university uses Microsoft Reporting Services to write the course demand reports used by deans and college faculty to identify which courses would benefit the most students.

One of the keys to successful project implementation was a focus on collaboration with the colleges and departments across the university—those stakeholders that ultimately determine course offerings and shape schedules. Their involvement helped ensure that the tools and information generated by the system would be highly useful. “I think it’s important, with change and new technology, to work with the key stakeholders before the project goes live—getting their feedback and responding to that,” says Grommo. The project was a true team effort, encompassing interdepartmental contributors ranging from Academic Advising, to the colleges and departments, to developers and programmers.

The reports allow users to view data by the student academic level—graduating seniors, seniors, juniors, sophomores, freshmen—so decision-makers know not only which courses are in demand, but who needs them. This is particularly useful in recognizing bottleneck courses and alleviating potential roadblocks to graduation for upper-division students. Having real data, instead of “word of mouth” observations from advisers and students, is helpful in identifying and addressing problem areas more quickly. And access to individual student detail allows communications with students about course offerings that might help them satisfy degree requirements, whether for large-enrollment lower-division courses or for upper-division electives.

Katherine Kantardjieff, dean of the College of Science and Mathematics, observes, “It is a complex process to balance and offer a variety of elective classes—which might have low enrollment numbers—with those classes required for graduation, which have large enrollments and fill quickly…. Colleges and departments [benefit from the new system] since they are severely constrained by budget reductions and cannot afford to offer all courses available in the college catalog. This system of processes and reports gives them visibility into graduation needs of the student population. Colleges then can mix elective courses and high-demand courses effectively in semester schedules.”
For the near future, the university is planning several related projects, including a “roadmap” students can access directly, starting at the freshman or transfer-student level, that will assist them with their academic planning and include preference updates and “what-if” simulations. The roadmap will both inform student planning and provide visibility into future course demand. CT

Meg Lloyd and David Raths are freelance writers based in northern California and Philadelphia, respectively. Kanoe Namahoe is an editor for campustechnology.com.

MEET THE JUDGES

As part of the evaluation process for the Campus Technology Innovators award program, entries were reviewed by our Innovators Judging Committee, a group of higher ed tech leaders, many of whom are former Innovators themselves. Judges did not review entries from their own institutions. Final winners were chosen by our team of editors.

Jill Albin-Hill
CIO
Dominican University (IL)

Keith Bailey
Director, e-Learning Institute
Penn State University

Kyle Bowen
Director of Informatics
Purdue University (IN)

Bob Bramucci
Vice Chancellor, Technology and Learning Services
South Orange County Community College District (CA)

Gary Brown
Senior Fellow, Association of American Colleges and Universities
Academic Director, Association for Authentic, Experiential and Evidence-Based Learning
Portland State University (OR)

W. Gardner Campbell
Director, Professional Development and Innovative Initiatives, and Associate Professor
Virginia Tech

Edward Chapel
VP for IT
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Mark Frydenberg
Senior Lecturer of Computer and Information Systems and Director of the CIS Sandbox
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Chetan Sankar
Professor of Management and Director, Geospatial Research and Applications Center
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Jennifer Spielvogel
VP, Institutional Planning and Effectiveness
Cuyahoga Community College (OH)

Raymond Uzwyshyn
Director of Libraries
American Public University System

Anu Vedantham
Director, Weigle Information Commons
University of Pennsylvania Libraries

VIDEO: Administrators from CSU San Marcos explain the thinking behind the Strategic Class Scheduling project and how the system works.

For a captioned version, visit CT on YouTube.
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