

Fall 2015

ACUTA Journal of Telecommunications in Higher Education

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JOURNAL



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for Success**

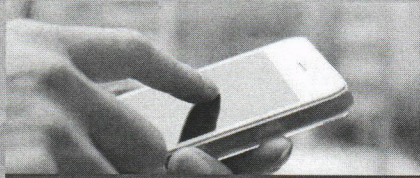
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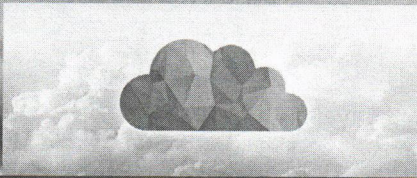
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- Speech
- Location-based availability
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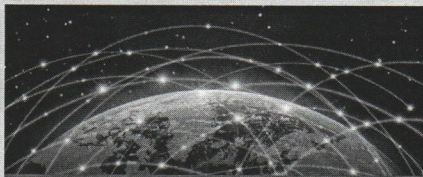
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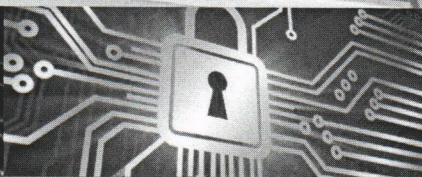
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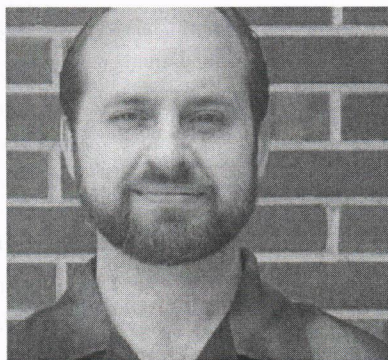
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Quotes of Note



Having a good web and social media presence has become essential. The challenge on our campus is a web infrastructure that is decentralized and fragmented. Centralized content management with responsive design is key to the solution, and collaborating with other departments is more important than ever.

Riny Ledgerwood
 Director,
 Telecommunications
 San Diego State
 University
 San Diego, CA



Collaboration is the key to working in higher education. Without it, our natural specialization results in rigidity, entitlement, and the worst of bureaucracy. When we remember we all have the same goal, success comes easily. Only through cooperation can an institution take full advantage of specialization.

Sheard Goodwin
 IT Manager, Network
 Services
 University of Florida
 Gainesville, FL

The Year Ahead

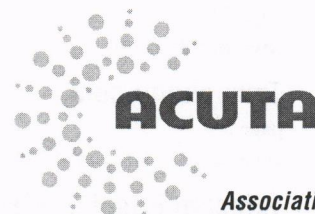
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Core Purpose and Values

ACUTA's mission is to advance the capabilities of higher education communications and collaboration technology leaders.

ACUTA's core values are to:

- encourage and facilitate networking and sharing of resources
- exhibit respect for the expression of individual opinions and solutions
- fulfill a commitment to professional development and growth
- advocate the strategic value of communications and collaboration technologies in higher education
- encourage volunteerism and contributions by individual members



**Association for
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Collaboration, whether inter- or intra-institutional, discipline-specific or inter-disciplinary, provides opportunity, networking, and increased leverage and impact potential of resources.

Joanne Kossuth

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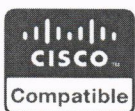
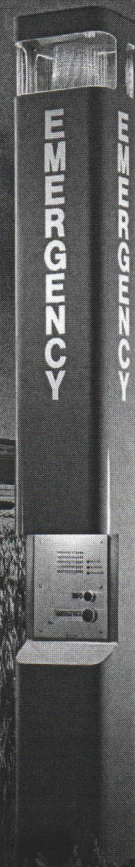
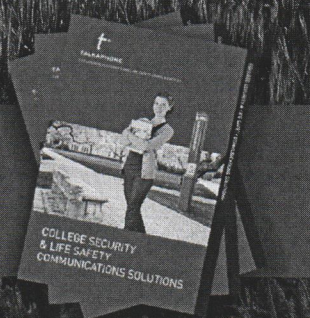
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The former situation, where each unit creates its own set of services or selects its own vended options, is fraught with inefficiency and duplication of effort. However, this diaspora of service selection is often a direct result of edge IT needs that are unmet by current enterprise services. UITS must be aware of these needs before they reach critical mass. This requires opportunities for IT professionals across IU to communicate on an ongoing basis, and such opportunities must lead to strategic interactions that encourage partnership.

Cathy O'Bryan

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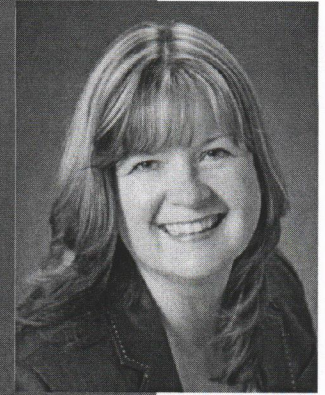
*Invite a colleague at a nonmember school
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PRESIDENT'S MESSAGE

Partnering Internally Improves Service at BCIT

by Michele Morrison
British Columbia Institute of Technology
ACUTA President, 2015–2016



In this issue of the *ACUTA Journal*, we are looking into various types of collaborations and partnerships, including those with vendors or other institutions that are external to our organizations and those internal with other departments.

Several years ago at BCIT our IT service desk partnered internally with two other service desks in our institute to form the technology service desk. These service desks are all based in different departments, and although we are all housed in the same building, the physical access to our desks was via three different external entrances that do not connect. The desks were staffed by personnel from different union bargaining units with varying contractual restrictions on items, such as hours of work, which resulted in different service hours. What connected all of us was our technology service focus.

The IT service desk had been in service the longest and had a relatively mature IT service management (ITSM) practice. We had a service catalog and used an ITSM ticketing system to track all of our client interactions. Services are provided via phone, email, web self-service, and a walk-up counter, and we support students, faculty, staff, and other members of the BCIT community. Our operation runs Monday through Friday from 8:00 a.m. to 9:30 p.m. and Saturdays from 8:30 a.m. to 2:00 p.m. The IT service desk client contact volume averages approximately 40,000 tickets per year.

The educational technology support (ETS) service desk provides support for our learning management system (LMS). At the time the ETS was formed, they did not use any sort of tracking system. Their clients included instructional staff and students based locally, across Canada, and around the world, as our LMS primarily supported online learning at that time. (The LMS has since expanded to any courses offered at BCIT.) ETS also has an external contract with the federal government to provide online learning courses to Health Canada, with service in English and French. They typically spend more time with their clients on each call or contact than the other two service desks do. Service is provided Monday through Friday from 7:30 a.m. to 4:30 p.m. (Ideally this service would be provided 24/7.) The ETS contact volume averages approximately 7,000 tickets per year.

The audiovisual service desk, as you might expect, provides AV support for classrooms, labs, and meeting rooms. Most of their client contacts come via a walk-up counter and some clients call in advance to book equipment or to report issues with equipment installed in labs

or meeting rooms. The primary clientele is instructional staff plus occasional students who need to check out AV equipment, such as cameras for projects. The AV service desk tracks equipment bookings online. Their hours of service are Monday through Friday, 8:00 a.m. to 3:00 p.m. for phone support, and the circulation desk is open for walk-in traffic from 8:00 a.m. to 10:00 p.m. The AV contact volume is approximately 1,000 tickets per year for service issues. Circulation bookings are tracked separately.

The ETS service desk is responsible for maintaining our individual operations with existing staffing levels, respecting union jurisdictions, and not changing our service or hours of operation. We needed to look at what we could do to provide a united front from a client perspective and what best practices we could extend across the entire operation.

We created a common phone number that we posted in all classrooms and on our websites. Clients calling this number get a menu with choices for the three service desks. If a client chooses the wrong option, the call can be transferred easily to the correct queue. Initially, it was suggested that the IT desk be placed first in the menu sequence, but the ETS desk staff felt that their clients would be confused and choose the wrong option. We warned them that anyone who wasn't sure which desk they needed to contact or who was in a hurry would just choose

option 1. A couple of years later, they asked us to change the menu sequence due to the volume of calls that were really meant for the IT service desk (which is now the first option).

The IT service's ITSM ticketing tool was rolled out to all three service desks with a common front end but separate instances of the tool so that we could manage our own queues. Tickets from the self-service tool or sent via email would go to the common technology service desk queue, and staff from the IT and ETS teams monitor the queue throughout the day and distribute tickets to the appropriate service desk queue. In addition, if, after further analysis, the ticket is deemed to be in the wrong queue, the tickets can be transferred to the appropriate service desk after the fact. There is a little overlap of services between our departments, and tickets that appear to belong to one service desk might actually belong to another.

The new technology service desk's hours of operation are Monday through Friday 7:30 a.m. to 9:30 p.m. and Satur-

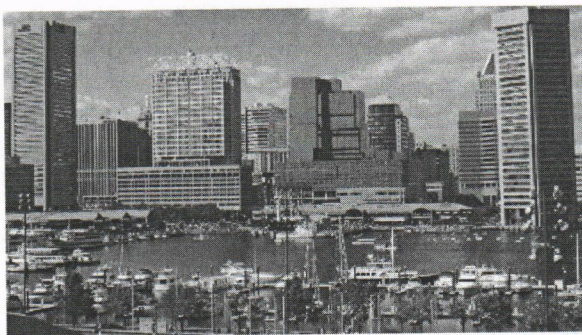
day from 8:30 a.m. to 2:00 p.m. The ETS service desk takes all calls on weekdays between 7:30 a.m. and 8:00 a.m. and distributes any tickets in the common technology service desk queue. If the calls are for another service desk, they will create a ticket and route it to the appropriate desk if they are unable to resolve the issue. At 8:00 a.m., all three service desks are open, and calls are routed per the menu. Both the AV and ETS service desks cease phone operations in the afternoon; at that point, the ITS service desk takes calls for all three areas and monitors the central technology service desk queue. (The IT service desk also takes all calls on Saturdays.)

Leading up to the launch of the technology service desk, we held a series of planning and working meetings. (This included a technology service desk marketing and communications plan.) Everyone was trained on the ITSM tool, phone queues, and so on. Once it launched, we held monthly meetings with the department managers and team leads while we worked out the issues

and shared information about future team projects, events, and other items of common interest. We now meet four to six times per year as needed. (We tend to meet more frequently if the common tools are being upgraded.)

The technology service desk has allowed all three participating departments to provide a higher level of service to our clients than we provided as individual desks in the past. With some relatively minor adjustments, we were able to provide a common front end for our clients, while still maintaining our individual operations. Overall our live coverage has been extended; we have more flexibility to hold staff meetings with our teams, as the other desks can help us cover; and if our clients don't know who they should be contacting, we figure this out for them and make sure the right team is solving their issues. This partnership has been a win-win for all involved.

Reach Michele at michele_morrison@bcit.ca.



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FROM THE CEO

Serving You Better with a Digital Journal

by Corinne M. Hoch, PMP
ACUTA CEO



Welcome to the premier issue of the digital *ACUTA Journal!* Since you are reading this, you have already found that the e-version of the *Journal* is intuitive, is easy to navigate, provides easy access to past issues, and allows many interactive elements that enhance your reading experience.

We've been printing the *Journal* since we first began offering it in the spring of 1997. This is our 76th issue. It is the same, great, trusted, and valued *Journal* content that you can now easily read at your desk or on the go. Through the years we've tried to cover topics that are important to you and your campus, such as new technologies, security, budgeting, strategic planning, infrastructure, funding, and lots more. We hope this move to the digital scene will allow us to serve you even better.

"I am very excited to see the *Journal* move to a digital format that supports my personal interest in environmentally friendly initiatives," says Michele Morrison, manager of client services, British Columbia Institute of Technology, and ACUTA president, "It will contain all of the same great content and can be consumed whenever and wherever our members want."

When we first began to explore the idea of going paperless, I wanted to make certain that we were able to maintain the excellent content quality as we continue to provide our flagship publication to our members. Going "green" was not my top priority, but it is a most desirable criterion for project selection.

Adrienne Esposito, director, office of information technology, Rutgers University, and ACUTA director-at-large, had this to say: "I'm so excited the *ACUTA Journal* has gone off paper and online! With nearly everything going digital, it feels like a natural progression. Now I can read it anywhere and easily share it with colleagues."

What can you expect when reading the *ACUTA Journal* from your desktop in your campus or home office?

- A Flash version of the digital *ACUTA Journal* will be displayed on your desktop browser, such as Internet Explorer, Chrome, Firefox, and others.
- Past-issue thumbnails will be available on the right side of your viewer. You may click to read another issue of the *Journal*.
- At the bottom of your viewer, you may have already noticed the quick page index of the current issue.
- Printing pages and downloading the entire issues as a PDF can easily be done; just look at the top of your viewer.
- You may have already noticed that social-media sharing options are available at the top of your viewer.
- At the top right of your viewer, you'll find a QR code for your convenient, mobile experience.

What can you expect when reading the *ACUTA Journal* from your mobile device?

- If you're reading this from one of your mobile devices, you've already found the typical swipe left/right and tap-to-zoom navigational features.
- At the bottom of your mobile viewing pane, just click the up-arrow button for the following:

- Quick navigation to individual pages via graphic snapshots
- An icon showing the listing of past issues
- An icon for PDF downloading/viewing/printing
- An icon for social sharing

If you are using an Android phone or tablet, you will see the Flash version of the *Journal*. If you are using an iPhone or iPad (iOS), you will see the HTML5 version.

According to Jeanne Jansenius, director of telecom and technology infrastructure services at Sewanee: The University of the South and ACUTA secretary/treasurer, "Sometimes in order to improve, you must be willing to change the services you provide. The *Journal's* going electronic will allow valuable and timely information at your fingertips at any time and any place. This is an exciting time for ACUTA—a true leader keeping us expeditiously informed."

Why have we gone digital and made the leap to digital publishing? By maintaining the excellent *Journal* quality, by making it easier to read on the go (on mobile devices), by improving the

production cycle, and by enhancing the advertising opportunities, we know that our ACUTA membership will embrace the digital version. We will be able to reach more readers in a more timely and mobile manner, a goal that is fitting for the Association for College and University Technology Advancement.

Western University's telecom business solutions manager and ACUTA Publications/Media Committee chair, Mona Brennan-Coles, adds her enthusiastic review: "I am excited that ACUTA is now publishing our *Journal* digitally. ACUTA continues to model using technology to improve business processes and communications cost-effectively."

What are some of the other benefits of providing the *ACUTA Journal* in a digital manner?

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Succinctly summarizing his opinion of the new e-journal, Mark Reynolds, associate director of IT at the University

of New Mexico and ACUTA immediate past president, notes that the digital *Journal* provides "exactly the touch and feel we need for our audiences of today."

Please remember that we always welcome your input for how we can improve the products and services ACUTA delivers to you. The board and the professional staff invite you to contact us with your questions or comments. You can reach me at choch@acuta.org or our editor, Pat Scott, at pscott@acuta.org. We will listen to you and do our best to meet your needs in every way. We try to make decisions based on what you tell us. After all, YOU are ACUTA.

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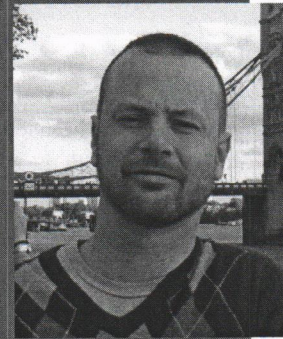
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LEGISLATIVE & REGULATORY AFFAIRS COMMITTEE

UPDATE: TOP FIVE ISSUES

by *Eric Breese*
Committee Chair



One of ACUTA's most active committees is the Legislative and Regulatory Affairs Committee. Since its establishment, this committee has developed a voice for campus technology that is heard at high levels in Washington, D.C. In the past year, the "Leg/Reg" committee has spoken up regarding important issues relevant to our jobs. Several pieces of federal legislation and FCC regulation are currently active at the federal level that affect higher education. Beginning with this issue of the *Journal*, the Leg/Reg Committee will provide information that you can use to keep your campus up-to-date with what is happening not just in the United States but in Canada as well. Here are the top five issues that I believe are worth watching this year.

Higher Education Reauthorization Act (HEA)

The Higher Education Act was originally passed in 1965 and reauthorized in 1968, 1971, 1972, 1976, 1980, 1986, 1992, 1998, and 2008. The 2008 reauthorization was called the Higher Education Opportunity Act (HEOA). The act expired in 2013

and will need to be reauthorized by Congress and signed by the president. The act is responsible for the student loan system, the Pell Grant tuition-assistance program, teacher-preparation provisions, and various other tuition-funding programs.

A component of the HEOA that was a major issue for those of us in higher-education IT management are the provisions requiring colleges and universities to help prevent illegal file sharing. This has resulted in colleges and universities becoming involved in Digital Millennium Copyright Act (DMCA) violations.

This year's reauthorization may be completed by the end of the year and will likely start with the revision of the elementary and secondary school act. The act will likely focus mostly on funding issues and will not readdress the copyright issues.

Universal Service

The Universal Service Fund (USF) was created in 1997 to help fund service to rural areas, schools, libraries, healthcare, and low-income consumers. The fund is currently broken down into several smaller funds: the High-Cost Fund, which helps balance the cost difference between providing service in urban versus rural areas; Link-Up America and Lifeline, which assist low-income consumers; E-Rate, which provides subsidies for schools and libraries; and Telehealth/Telemedicine for rural healthcare.

The use of the fund has continued to grow over the years as the technologies needed to provide service have changed. For example, broadband (Internet) service is now considered eligible as part of the Connect America Fund. In addition to the increase in utilization, the traditional funding mechanisms for the fund, land lines, have continued to decrease.

Over the past several years, there has been a lot of discussion about contribution methods. One of the proposals that has the greatest risk to higher education is a numbers-based methodology. Under this proposal, the fee would be charged to every working telephone number. Because colleges and universities generally have many DID numbers, this method would exponentially increase an institution's monthly cost. At this point, no major changes have been made to the funding mechanism; however, I believe it is only a matter of time. ▶

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Cybersecurity

For the past several years, the federal government has been looking into cybersecurity, with the goal of protecting the nation's power plants, water systems, and other forms of critical infrastructure from crippling cyberattacks. The method used to accomplish this is to ensure that sharing of information about cyber-threats is transparent and timely.

Work on the bill continues to move slowly. The House of Representatives has passed its version of the bill, H.R. 1731, the National Cybersecurity Protection Act of 2015. The Senate is working on S.754, the Cybersecurity Information Sharing Act of 2015.

One concern is to ensure that any bill passed by Congress does not preempt existing state laws, as many of them provide better protection to consumers than a federal law would provide.

FirstNet

FirstNet is an emergency responders' network that will be a high-speed,

nationwide, wireless broadband network dedicated to public safety and will provide a single, interoperable platform for emergency and daily public-safety communications. It was created in 2012 as part of the Middle Class Tax Relief and Job Creation Act.

Work on implementing the network and providing funding continues to move forward with funding from a spectrum auction. What most people don't realize about the act, however, is that every state has to make arrangements to build its own network or pay for it. For those institutions with their own emergency response staff, this could become a financial burden, depending on how their state chooses to handle the funding.

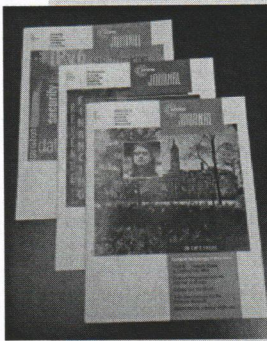
Canadian Legislation

Several new pieces of legislation this past year in Canada will affect our institutions in that country. The Canadian Anti-Spam Law (CASL) went into effect last summer. CASL applies to all electronic messages that organizations send in connection

with a "commercial activity." It requires that organizations that send electronic messages in or out of Canada receive consent from recipients before sending messages. Messages sent from colleges and universities fall within the scope of the law. Since this law's implementation, ACUTA has formed a working group with our Canadian members to help them understand it. Institutions not located in Canada but contacting Canadian students also need to be aware of this legislation.

In addition to the CASL legislation, Canada has been forming a fund similar to the U.S. Universal Service Fund that will be used as part of a huge broadband deployment initiative to subsidize rural broadband deployment.

If you have any questions relevant to legislative or regulatory affairs, contact anyone on the committee or Eric at ebreese@iit.edu.



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Foundations of Collaboration

Three private schools in Massachusetts demonstrate how collaboration works

by Joanne Kossuti

Higher education, as an industry, is under increasing pressure to articulate its value proposition to society as a whole. The cost-of-higher-education conversation, in particular, lends itself to media headlines on a consistent basis.

Babson College, Olin College of Engineering, and Wellesley College, neighboring private schools in Massachusetts, are collaborating in a number of ways, including academic, administrative, and student services. The collaborative efforts have benefited three communities in general and the overall student experience in particular.

As institutions work to define their value propositions, *collaboration* is a word that seems to be increasingly in the forefront of conversations. Collaboration means many different things, depending on the audience to which the question is posed. Wikipedia says, "Collaboration is working with others to do a task and to achieve shared goals. It is a recursive process where two or more people or organizations work together to realize shared goals. This is more than the intersection of common goals seen in cooperative ventures, but a deep, collective determination to reach an identical objective—for example, an endeavor that is creative in nature—by sharing knowledge, learning, and building consensus."

It further says that "Most collaboration requires leadership, although the form of leadership can be social within a decentralized and egalitarian group. In particular, teams that work collab-

oratively can obtain greater resources, recognition, and reward when facing competition for finite resources."

Collaboration, whether inter- or intra-institutional, discipline-specific or interdisciplinary, provides opportunity, networking, and increased leverage and impact potential of resources.

Benefits and Challenges

Potential benefits of collaboration include solving problems that one person or group cannot solve alone, brainstorming among groups to increase the potential for innovation, leveraging scarce resources, considering the big picture as opposed to silos, and working with colleagues on making a difference.

Potential challenges of collaboration include different communication styles and types, varied experience levels,

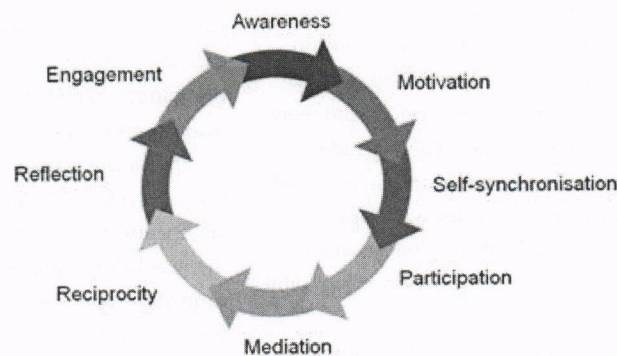
different cultural values; and assorted organizational structures, time, scale, complexity, and funding/cost models.

Critical components of collaboration include defining short-term and long-term goals, maintaining a vision or eye on the horizon, persistence, piloting and building on successes as well as learning from failures; tracking assessment or evidence of success; communication and more communication; agility and flexibility; and agreeing to alternatives, such as Plans B and C if A does not work.

Making It Work

The model in Figure 1 has proven a useful tool in understanding the evolution of the Babson-Olin-Wellesley collaboration. The first hurdle in the collaboration was getting the word out and providing opportunities. Once awareness was

Figure 1. Collaboration Life-cycle



Source: <http://www.aiim.org/What-is-Collaboration>

increased, the communities had to become motivated to participate. Faculty, student, and staff representatives were crucial in this process. Equally important was the leadership of the presidents of the three colleges, expressing their support for the collaboration and for the community to help define the collaboration.

From participation, the collaboration processed feedback and reflected on impactful changes with a focus on balance of value-adds among the three institutions. Transparency and visibility of changes helped improve engagement and reinforce the collaboration lifecycle.

The following is a statement of intent for the Babson-Olin-Wellesley collaboration (www.3collegesbow.org), which was originally based on a statement of intent between Babson College and the Franklin W. Olin Foundation on behalf of the proposed Franklin W. Olin College of Engineering.

It is our intent to collaborate in every way while maintaining two separate institutions with different degree programs but comparable philosophies. Both institutions are dedicated to pedagogy that is holistic, integrated, and innovative. Their academic programs will focus on the nexus of theory, practice, and conceptualization, with curricula that are applied, field-based, global, and ethical. Collaboration will encompass academic, co-curricular, and administrative activities that enhance the educational excellence of both institutions.

This initial collaboration involved a number of fee-for-service agreements, with Babson College providing the majority of the services to Olin. As the relationship evolved over time, Olin College decided to provide some of the services, and there were other areas where Babson and Olin Colleges shared services or Olin provided specific services to Babson College. Currently, Olin and Babson Colleges share athletic services, health services, and public safety.

While cross-registration among Babson, Olin, Wellesley, and Brandeis was part of the plan from the start of Olin Col-

lege, the presidents of Babson, Olin, and Wellesley Colleges decided to deepen the collaboration and focus on a ground-up or grassroots effort to engage the three college communities in a goal of a “virtual campus” in 2010. The presidents were clear in their articulation that they did not know what this would look like, but would learn as they went. As part of this focus a faculty director position was established. The position was designed to be rotated among the institutions, and each individual was to hold the position for no longer than three years. The purpose of the role was to engage, support, and build coalitions around proposals for collaboration generated by the college communities. In addition, a staff member at each of the three colleges was designated as a collaboration point person to provide administrative and logistical support for the initiatives, as well as suggest other collaborative administrative opportunities.

Collaborative Initiatives

Examples of collaborative initiatives during this period include the appointment of a Babson dean as interim provost for Olin College; joint faculty appointments; faculty intercession workshop; interdisciplinary teaching across campuses; the Babson Summer Venture Program, run by Olin College; a leadership and ethics course taught by the presidents of the three colleges; the start of the “BOW Intercession” project with a Charter Cities initiative; shuttle services; Mellon Innovation grant funding; and a Grand Challenges Scholar Day and Conference event hosted by Wellesley College, programmed and supported by all three institutions with shared funding.

Over a few years, some patterns became evident. The home campus of the faculty director became more engaged in the collaboration, while the other two campuses became less engaged during the term of that particular faculty director. When the faculty director position rotated to another campus, this pattern repeated. Based on this information and

in working with the provosts of the three colleges, a change in governance was proposed to the college presidents. A faculty Steering Committee was created. The committee consists of a faculty representative from each of the three institutions, the college provosts, the BOW program coordinator (a new resource), and the BOW administrative director (a role added to an existing position at one of the three colleges).

This governance structure has proven more agile, timely, inclusive, and effective than the previous structure. Examples of collaborative initiatives during this period include the following:

- Presidential Innovation Fund Grant program, supporting projects such as expanded shuttle services (including weekends), Education Consulting for Technology Ventures, BOW Game Symposium, Sustainable Skill Share Day, Mathematics in Context, Big Ideas for Busy People, and Mix and Stir (trios, composers, and actors in concert)
- Intercession projects with Acera School, Practically Green, and Pedagogy and Learning for BOW
- Curricular Innovation Fellows program
- BOW Sustainability Certificate program funded by a donor (Wellesley environmental sciences, Olin technology, Babson entrepreneurship)
- Joint admission publications
- BOW presences at all new-student and faculty orientations across the campuses
- Redesigned web pages
- Faculty Connections program
- Staff Connections program
- Ongoing social opportunities and regular cross-institution meetings.

Lessons Learned

Lessons learned through the various processes, organizational changes, and pilot programs include the following:

- Collaboration is hard.
- A sense of humor eases the path.
- Some level of systems/processes and procedures must exist; an unconference approach does not work in its entirety.
- There is no such thing as “over” com-

munication or “opportunity overload” when it comes to sharing information through multiple channels.

- Institutional and personal respect is a must. Everyone must appreciate the unique features and abilities that the individuals and institutions bring to the table. If this does not happen, trusting relationships become even more difficult to form, and it becomes easier to put obstacles in the path of collaboration.
- Each institution needs to have a “win” and must have the ability to enact the programs within their culture.
- It is critical that each institution can speak to the benefits of the collaboration from its perspective, with its respective audiences. To that end, it is very important for each institution to have designated faculty, staff, and student representatives to champion the collaboration.
- Everyone must appreciate the importance of informal, personal interaction in a “neutral” venue. Hosting receptions on a particular campus resulted in lower attendance than a reception hosted in a local restaurant or a “neutral,” conveniently located venue.
- Top-down decision making does not work, but visible leadership support is critical. The fact that presidents talk about the collaboration to each other, to their boards of trustees and overseers, and in their town meetings makes a difference. Leadership behavior matters.
- Persistence is a necessary quality for everyone and everything involved in collaboration. When a particular idea does not work in one incarnation, it can still work in another.
- Willingness to try, fail, try again, and be open about what the successes and failures were helps to engage even more of the communities. We tried student working groups, small committees, and the like and now have elected student ambassadors.
- Sometimes a visible failure can actually become a success; do not view the success or failure of the collaboration on one experience, no matter how visible. When one of the college presidents was

asked if they could eat on another campus, the response was “of course.” The word got out, and more than 600 Babson students came to dinner in the Olin dining hall, overwhelming Olin’s student population and their space, while only 30 Olin students went to dinner in the Babson dining hall. Needless to say, this was not well received. Immediate review and consultation resulted in limiting the number of meals per semester the Babson students could eat at Olin and leaving the number of meals the Olin students could eat at Babson unlimited.

Conclusion

As you can see, one of the most important things is not to give up! Focus on the future and the benefits to the student

experience. Assess regularly and make adaptations when necessary. Document and celebrate achievements and communicate them well. Agility and flexibility are key.

The presidents want this to be a grass roots, ground-up collaboration. They do not want to dictate what the collaboration looks like. In time, ideally, the collaboration will be an engine that creates its own steam on a regular basis and becomes enculturated at the three institutions to the point of being passed on from class to class. They are pleased with our success and want us to continue to figure out how to enhance the student experience across this virtual university.

Joanne Kossuth is vice president for operations and CIO at Olin College of Engineering. Reach her at joanne.kossuth@olin.edu.



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Leveraging City Infrastructure to Extend Campus Wireless

A case study from Purdue

by Andrea Thomas

Purdue University's manager of network engineering and operations, Ryan Harrington, was dining at the 2014 Cisco Certified Internetwork Expert (CCIE) event in San Francisco when he mentioned an idea that had been stirring in his head.

Seated next to Harrington were two representatives from Wintek Corp., an Indiana-based company that provides Internet services to sister cities Lafayette and West Lafayette, which border Purdue. The two network engineers listened as Harrington described thoughts he had previously sketched on a napkin, a representation of the cities' wireless traffic alongside the university's wireless traffic. With just a few arcs of his pen,

Harrington had connected the two. He theorized with the Wintek representatives that the two networks might be joined just as easily in real life.

At the time, Purdue provided wireless access to students, faculty, and staff in nearly every academic building and residence hall. However, Harrington and other Purdue IT leaders were hearing more and more requests for greenspace wireless. Upon investigating the cost and potential for widespread outdoor wireless access points on campus, Harrington discovered that Wintek and Purdue used the same Cisco equipment to provide wireless access to their customers. His hunch was that the two networks might work together.

"I started talking to Wintek employees about the idea, and they seemed excited about it," Harrington said. "So we set up a meeting with Oliver Beers, Wintek's chief operating officer, and the two IT directors for the cities of Lafayette and West Lafayette to have an initial discussion."

The idea was relatively simple—broadcast Purdue's wireless network (Purdue Air Link, or PAL) over the Lafayette and West Lafayette public-access network in any location where the cities already offered free Wi-Fi for residents and visitors (see Figure 2).

It would allow for a seamless wireless transition for students meandering from campus to coffee shops in downtown Lafayette, to the farmer's market a few miles from Purdue, or to several city parks. Pools, community centers, bus transfer stations, and libraries would be covered as well. And because the infrastructure was already in place, there was nearly zero cost to Purdue.

History of Purdue's Wireless Network

Purdue's wireless network was deployed at the beginning of 2002. By 2005, about 700 access points were located in various academic buildings, and that number more than doubled by 2008. The following year, the university began using the 802.11n standard to give the network more speed and range, and the growth rate exploded. As of 2015, Purdue has more than 6,000 access points covering the academic campus and about 2,400 covering residence halls.

The network's progression over the past decade can be summarized by one word: *more*. Provide more connectivity

Figure 1. Students walk under Purdue's gateway arch. Photo courtesy of Purdue Marketing & Media



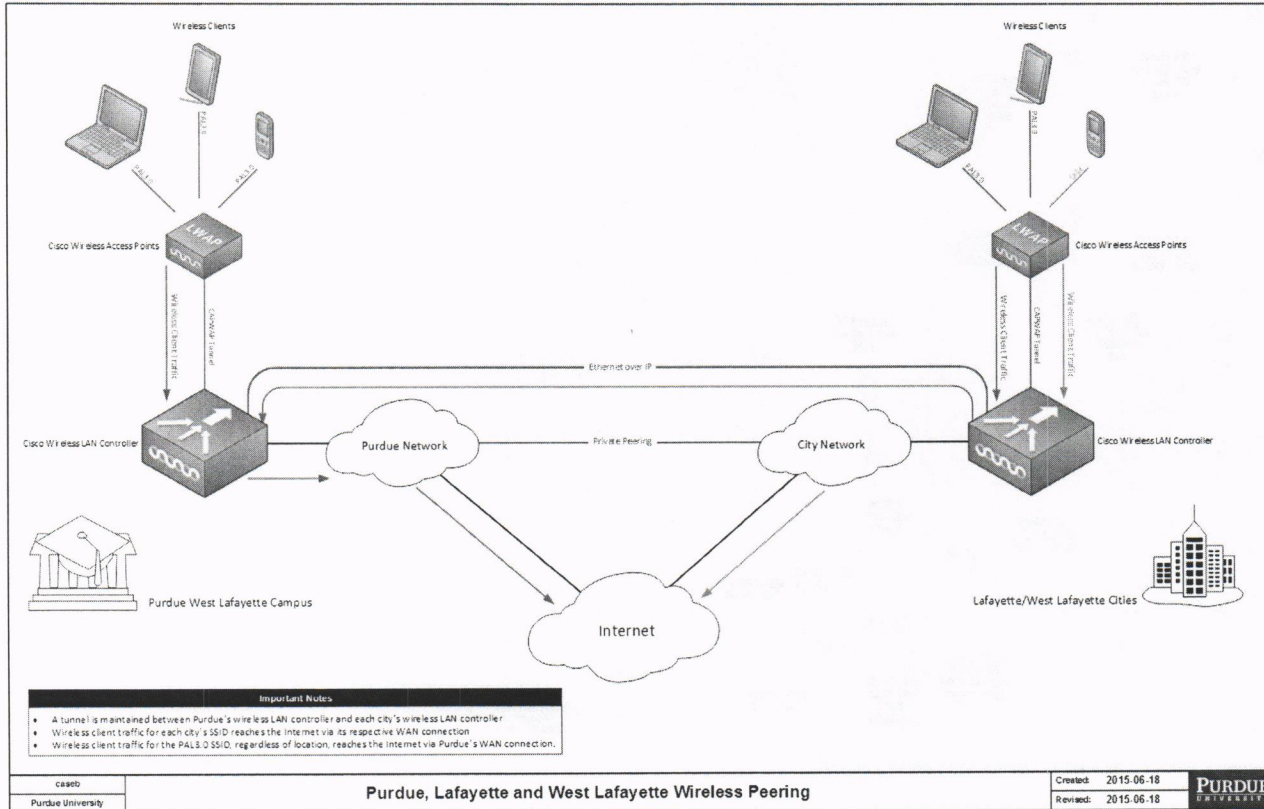


Figure 2. A two-dimensional representation of Purdue's linked wireless networks

for students, do more to enhance the educational process, enable more access for faculty and staff.

To that end, among other reasons, Purdue joined eduroam, a secure federated network-access service that enables students, faculty, and staff to connect to Wi-Fi at more than 5,500 eduroam-enabled locations worldwide, which means they can join eduroam hotspots around the United States and abroad without hassle or data roaming charges.

So when the opportunity arose to expand wireless access further, beyond the campus boundaries, the decision was a no-brainer, said Gerry McCartney, Purdue's system chief information officer, vice president for information technology, and Olga Oesterle England, professor of information technology.

"One of our goals is to help individuals at Purdue stay connected in a convenient and cost-effective way," McCartney said. "By extending Purdue's wireless

coverage to more areas in the Greater Lafayette community, we could enable students, faculty, and staff to roam, untethered, while maintaining secure access to the tools needed for their work."

There were perks for the cities, too. Lafayette Mayor Tony Roswarski said broadcasting Purdue's wireless network from popular city locations would provide one more incentive for students and Purdue staff to venture across the Wabash River, which divides the cities, and take advantage of the attractions in downtown Lafayette (see Figure 3 on page 18).

West Lafayette Mayor John Dennis said Greater Lafayette's need for access to technology grows exponentially every year. From the perspective of Dennis, providing free wireless access throughout both cities was a step in the right direction of meeting the needs of current citizens and making the community more attractive to potential residents.

Behind the Scenes

Once the appropriate individuals had verbally agreed to the plan, Harrington and Diana Hancock, Purdue's commercialization director, drafted a memorandum of understanding to establish an official partnership with the cities. The document was signed in October 2014, and network engineers at Wintek and Purdue began working shortly thereafter to bring the idea to fruition.

Brandon Case, Purdue's senior network engineer who worked on the project, said the setup was theoretically simple. "Purdue and Wintek have wireless controllers that act as the brains of access points located around the cities and on campus. When users join the network, that traffic is routed through a tunnel that connects the various wireless controllers," Case said. "Once Wintek began broadcasting Purdue's SSID (PAL 3.0), Purdue students, faculty, and

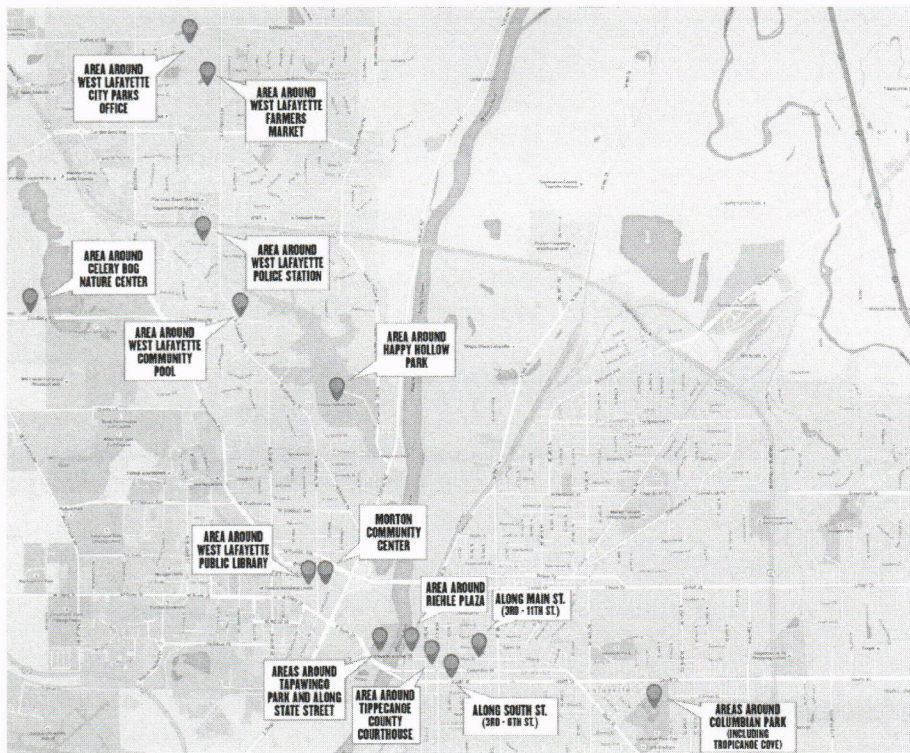


Figure 3. Purdue's new Wi-Fi locations in Greater Lafayette

staff could enjoy the same secure wireless experience in downtown Lafayette as they would if they were in one of the university's academic buildings or residence halls."

Parts of the work were sometimes challenging due to communication limitations. For example, Case found that some of the hardware configurations were easier to show than describe, so he set up a Cisco WebEx meeting that allowed each engineer to see, via screen-sharing, what the other was working on. "It's crucial to see both ends of a connection when you're troubleshooting, so there were a lot of phone calls between me and the Wintek engineers," Case said. Without getting into too many technical details of the project, Case said it wasn't always a glamorous process.

"It was basically three nerdy guys sitting on the phone going, 'Does it work now?'" Case said. "Other universities could easily do this if they wanted to, under the right circumstances. It may be of particular interest to community colleges or universities that are nestled in the center of a city, provided they use compatible wireless services."

Due to normal business responsibilities and project deadlines, completing the wireless expansion in a timely manner also was a challenge. Because it was an enhancement Purdue's wireless team initiated, the work sometimes got put on the backburner so staff could focus on more short-term, critical assignments.

However, once the configurations were complete, the PAL network became accessible in city locations with essentially the flick of a switch. Case said at

least 20 people joined the network from non-Purdue locations the moment it became available, and the number of users has been growing steadily since. His team anticipates usage to spike in the fall, after students return from summer break. According to Harrington, Purdue will continue to search for new opportunities to make its wireless network broadly and easily available to the university community.

"We've made long strides over the past few years, but you're never done trying to find new and innovative ways to improve wireless service," Harrington said. "Fortunately, the work we're doing now should provide a valuable foundation for future improvements."

Andrea Thomas is a technology writer for IT at Purdue. Reach her at thomas78@purdue.edu.

Out with the Old (Email) and in with the New (Collaboration Tools)

Less email/more collaboration systems means campus networks must adapt

by Paul Korzeniowski

At one time, the only way to exchange information was to either talk with a cohort face-to-face or pick up the telephone. Electronic mail emerged in the 1990s and caught fire during the dotcom boom. This communication channel extended user options to data exchanges as well as voice communications and ushered in a new communication era.

The recent rise of mobile and social media tools is again altering the communication landscape. Texting, and eventually Twitter, have been added to the data connection mix. Videoconferencing and applications like Instagram have increased the role that rich media play in collaboration. The growing variety of options arose in an autonomous fashion, with each one serving a particular communication need. Consequently, confusion has arisen about which channel is best, inefficiencies have emerged as duplicate messages are sent, and communication managers have difficulty tracking increasingly diverse exchanges.

Recently, a new generation of collaboration tools has been designed. These solutions work with a variety of media (text, video, tweets) and provide users with the means to consolidate their channels. The systems also change the way that communication occurs, which affects campus networks. As a result, communication managers need to take note of the emergence of these tools and plan accordingly.

Losing One's Voice

The university communications infrastructure is now in flux. The heyday for

voice systems is clearly in the rear view mirror. Market research firm Infonetics found that PBX sales declined by 4 percent to \$8.7 billion in 2014, and that erosion is expected to continue in the future.

Voice has been losing ground because employees have and prefer other forms of communication. Email continues to be popular. This channel is well suited for broad-based notifications such as posting the details about a department meeting, as well as quick interpersonal communication tool—say, sending a note asking for clarification about a project delivery date. Consequently, the number of users, as well as the volume of messages sent, continues to rise. Market research firm Radicati Group expects that the number of email users worldwide, including businesses and consumers, will grow from 2.6 billion in 2015 to 2.9 billion in 2019.

Other ways of communicating are gaining traction. Instant messaging (IM) has become popular and is expected to total over 3.2 billion users in 2015, according to Radicati. This figure is expected to swell to more than 3.8 billion by the end of 2019. More than 205 billion IM messages are sent every day in 2015, according to Radicati.

Let's Get Social

Social networking is playing a bigger role in university communications. Not only is it being used for marketing, but it is also supplementing other types of communications—for instance, tweets notifying students and employees about a

possible security problem. New forms of social interactions are emerging, such as users embedding short video clips rather than text into their messages. Because of the different benefits, the worldwide number of social networking users will reach 1.8 billion in 2015 and will grow to more than 2.5 billion by 2019, according to Radicati.

These different communications tools come with various limitations. Spam has been an ongoing issue with email. Users often find their in-boxes deluged with bogus messages. Vendors try to weed out bogus items with spam filters; however, the bad guys constantly tweak their messages so they bypass the filters. The criminals are quite efficient: a Kaspersky Lab analysis in the first quarter of 2015 found that spam accounted for 59.2 percent of all email traffic.

The growing volume of messages makes it difficult for users to manage their systems, and just finding a needed item can be a challenge. Few tools are available to help users sift through and locate important data with social media. Increasingly, information is scattered in a variety of systems, so individuals bounce from email to text messages to social media in search of often elusive items.

Sifting Through the Junk

Trying to manage these different communications systems is tedious. Each day, employees delete the junk, prioritize messages, and label important notes so they are not missed. Vendors have provided users with high-level tools to

help with the process, but the solutions are usually limited in how closely they examine the content and their ability to make intelligent determinations about the value of different items.

New solutions are being developed to help individuals and communications managers enhance organizational interactions. Circuit, Glip, HipChat, Knowmail, Mailbox, Slack, Viber, and WhatsApp are some of the new tools (see sidebar). These solutions are designed for next-generation communications and include features to address the limitations found with traditional systems.

Mobile capability is an area of emphasis. These products were built to run on handheld devices, such as smartphones and tablets, and work well with those interfaces. These systems work with a variety of media—text, voice, and video—and offer a variety of services, including content sharing, search, and collaboration.

Consolidating Information Feeds

Rather than force users to work with a hodgepodge of channels, these tools consolidate various information feeds. The systems rely on artificial intelligence capabilities in order to sift through all the messages and present those of the most relevance to the user. The products feature highly intuitive user interfaces. The main window has an overview of all communication and is often flanked by bars on the sides that let users drill down into different channels. Colors illustrate information exchanges. A channel may be highlighted in red when the users miss an important note, and green may be displayed if the person has been mentioned by name in a communication.

The new systems include various group messaging functions. The apps let teams send messages to each other and categorize them in meaningful ways. Consequently, finding relevant messages

becomes simpler. Also by creating circles of communication, a company essentially eliminates spam and any other superfluous content: outsiders do not have users' contact data.

Welcoming New Employees

These tools provide new employees with more context for how the organization acts. Because the systems store all of the organization's communications, they serve as a central vault of institutional memory. At a traditional company, a new person getting on-boarded begins with an empty in-box, but with these tools, a newbie starts with complete organizational knowledge. The new hire can examine the last week or two of exchanges and learn who makes decisions in what domains and who answers certain questions.

The products have downsides as well as advantages. First, the number of com-

Variety of Tools Emerge to Ease Information Exchanges

One product's limitation is another vendor's opportunity. With communication options rising in variety and number, schools have been on the lookout for more options. New solutions have emerged to address those problems, and some are creating significant buzz. Flickr founder Stewart Butterfield was one of the forces behind Slack (<https://slack.com>), a new office collaboration and communication tool. His previous success has been noticed. His latest start-up raised nearly \$43 million in April 2014 and by October 2014 had \$120 million in venture capital led by Kleiner Perkins Caufield & Byers and Google Ventures. Slack already has a \$1.2

billion market valuation and is perceived as a leader in this emerging market.

Peter Pezaris, Claudio Pinkus, and David Hersh founded and sold Multiply, a company focused on social networking and social commerce. From there, they launched Glip (<https://glip.com>), which features built-in text and video chat as well as file sharing, task management, and shared calendars. In June 2015, RingCentral (www.ringcentral.com), a cloud provider, purchased the startup company, renamed the tool RingCentral Teams, and began integrating the messaging solution into its collaboration suite.

Launched in 2010, HipChat (<https://www.hipchat.com>) was designed as a

corporate team chat service and featured video calling, screen sharing, and security. In March 2012, HipChat was acquired by Atlassian, which has 1,100 employees and sells corporate team communication solutions.

Haim Senior, Oded Avital, and Avi Mandelberg worked as executives in a big corporation and became frustrated by the time they spent managing their messages every day. In 2014, the trio founded Knowmail (<https://www.knowmail.me>), which uses machine learning to determine which messages are important and puts those items at the top of the in-box.

Based in Boston, LogMeIn (<https://www.secure.logmein.com>) developed

munication options, users, and exchanges are all rising. Not only are more individuals sending more messages, but they are also using more bandwidth. Consequently, increases in network capacity need to be expected on a recurring basis, and communication managers must be ready to upgrade and swap out network equipment (routers, switches, network access points) regularly.

The tools have different foundations and attack distinct problems. "Many of these new systems are next-generation email systems," said Vanessa Thompson, research director at International Data Corp. (IDC). In theory, they work well with other channels, but in reality they do not mesh as well with other communications as they do with email.

Scalability Problems

The products are relatively new and therefore are far from full featured at this

stage of their development. In some cases, they do not scale up to meet the demands of large public universities.

Security is another weak area. Increasingly, users communicate from anywhere and with anyone, so the network has to authenticate users and ensure that malware does not make its way into the system. As a result, system security needs to be tied into authentication services, like directory services, and those links may not be available with some products.

Management functions are also immature. To date, the vendors have concentrated on end-user issues, such as providing an easy-to-use interface and supporting more communication channels. They have not invested as much in developing features so the communications team can manage the tools centrally. This area will get better in the coming years but right now is lacking in functionality.

The communications department has little experience with these tools. The solutions do not operate like traditional systems, so training will be needed in order to bring staff up to speed on the new products.

Communication has evolved from the days of the POTS line. Individuals arrive on campus nowadays with the ability to interact in a handful of ways. The different options create various inefficiencies. The search for an all-encompassing tool is underway, and the emergence of such systems promises to soon change university communications dramatically.

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join.me (<https://join.me>), a cloud-based, instant online-meeting application geared to ad hoc collaboration, formal presentations, training, and product demos. The company claims to have more than 15 million customers.

In 2011, a small team of engineers and designers, including Stanford University graduate Gentry Underwood set out to build a mobile collaboration tool. The company, Orchestra, Inc., delivered Mailbox (www.mailboxapp.com), a next-generation collaboration tool. As Orchestra was building up a customer base, Dropbox purchased the start-up in March 2013. A version of Mailbox tailored to Dropbox's cloud solution was announced in August 2014.

Unify roots are in the voice communications (PBX): It was the former home of Siemens solutions. In November 2014, the company launched Circuit (<https://www.circuit.com/>), a cloud-based social-business collaboration tool. Circuit organizes work around the paradigm of "conversations," which can be either open and available to all participants or private and geared to select groups.

Privately held Viber Media (www.viber.com) launched its collaboration system in February 2010 and emphasized mobile communication. Viber users send text messages, photos, and video messages; share locations with other users; and complete HD-quality calls to other Viber users. The company claims to have

over 360 million users in 193 countries.

WhatsApp Messenger (www.whatsapp.com) is a cross-platform mobile messaging app that allows individuals to exchange messages without having to pay for SMS services. The solution is available for iPhone, BlackBerry, Windows Phone, Android, and Nokia.

These vendors are addressing a fledgling need and garnering a lot of attention. As the market matures, a few top suppliers will emerge, but at the moment, academic communication managers find a hodgepodge of next-generation solutions from a variety of vendors. Ideally, one will fit with their school's communication needs.

Snapshots



Western University
Mona Brennan-Coles

Five years ago it became obvious that existing cellular capacity and coverage on Western's campus did not meet the need of students, faculty, and staff and that we needed to better manage corporate spending as cellular usage continued to increase among faculty and staff.

We began by investigating options to enhance cellular service for a community with multiple devices on all three major

Canadian cellular networks—Bell, Rogers, and TELUS. All of these carriers were prepared to enhance cellular capacity and coverage on campus in return for exclusivity—which was not an option for any of our constituents.

So we decided on a two-pronged approach: (1) Issue an RFP for a preferred cellular vendor with reference to the planned RFP for providing a distributed antenna system to increase capacity and coverage for all three carriers. Imagine our surprise when two of the three responses included an offer to provide enhanced cellular capacity *and* coverage at no cost to the university.

After an amended evaluation process that included a thorough review of the proposed solutions, we selected Bell to be our preferred provider in February 2012, with the expectation of having the first improvements available for the following September.

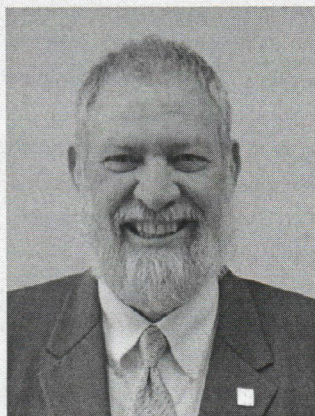
Western provided Bell with a letter of intent, and the work began as

contract negotiations continued. The contract was signed in August 2012, and the system went live in September 2012. As cellular usage increases, Bell continues to enhance the system annually.

Western provides secure space for the necessary equipment and fiber. Bell provides the equipment, works with the other carriers to install their equipment and pays Western for electrical use.

Western benefits from increased cellular capacity and coverage on campus as well as a very attractive plan available to faculty and staff for their personal use. Bell benefits from an increased client base. Our neighbors benefit because Western no longer uses all the cellular capacity. And Bell, Rogers, and TELUS all benefit from being able to provide better service to their customers.

Mona Brennan-Coles is telecom business solutions manager at Western University in Canada and currently serves as chair of ACUTA's Publications/Media Committee. Reach her at mona@uwo.ca.



**Community Colleges
of Spokane**
David E. O'Neill, PhD

I attempted a partnership six or seven years ago at a different campus that was located in a city of about 660,000. The city saw no way to create a return—the students were already shopping, eating, and drinking in town where the hot-spots were, and the city didn't have the resources to increase the bandwidth in the few hotspots it had control over, much less increase the number. The general consensus was that private businesses would be left to their own devices, and if there were any way I could partner with the providers directly, I should do so.

With what turned out to be more than a half dozen providers, it became unmanageable and just not a possible financial deal. I ended up walking away.

Now, although the technology has advanced since then and there may be fewer carriers/providers in some communities, I think similar issues remain. The really innovative piece or connection to the theme here would be how to create the right win on both sides. If you read the case study from Purdue on page 16, it seems to have been real obvious; but for other communities of greater complexity, innovation awaits.

Dave O'Neill is a former ACUTA president and former chair of the Publications Committee. He is currently CIO at Community Colleges of Spokane. Reach him at david.oneill@ccs.spokane.edu.

8 Steps to Successful Very-High-Density Wi-Fi

With higher-ed users carrying multiple devices, understanding the critical steps for mobilizing your largest facilities will lead to success

by Chuck Lukaszewski,
CWNE #112, ACMP,
AWMP

If your institution is like so many others, you're experiencing skyrocketing Wi-Fi demand. As many WLANs struggle to handle multiple devices per person, the challenges are especially acute in large facilities, such as lecture halls, cafeterias, auditoriums, sports arenas, or student unions—anywhere 500 or more people gather. Such spaces increasingly require very-high-density (VHD) wireless networks.

Not surprisingly, VHD Wi-Fi comes with a unique set of design and deployment considerations to ensure the successful delivery of the desired performance. To help make this complex topic manageable, here are eight critical steps to designing and deploying a VHD WLAN at your institution.

Step 1: Develop Requirements First, Seek Budget Later

Today's higher-education leadership needs very little—if any—selling on the merits of VHD projects. To the contrary, they frequently have big goals and dreams of creating state-of-the-art spaces, whether it's new construction or retrofits. This can lead to significant disappointments if a Wi-Fi deployment doesn't measure up.

In fact, failing to meet expectations is the most common pitfall we see with VHD deployments. And, the most common reason for this pitfall is trying to shoehorn a deployment into a budget generated prior to establishing project requirements. That's because VHD is

more complicated to scope than typical Wi-Fi.

For example, perhaps your basketball arena was built by creating a depression in the ground and then pouring concrete. Now you've decided you'd like to mount Wi-Fi access points along the floor behind the seats. As it's impossible to run access point wiring behind the poured concrete, you'll need to affix conduit along the surface. This adds significantly to costs.

Or consider a modern lecture hall building with expensively furnished ceilings that cannot easily be accessed to install cabling and radios. If your budget was set prior to understanding the wiring constraints, the compromises to other project aspects can significantly affect outcomes.

Of course, higher-education budgeting frequently includes some compromises. However, the key is achieving the appropriate balance, which typically occurs by gathering VHD requirements up front and then developing a budget to match.

Step 2: Assemble the Right Team

Unless you have VHD experts on staff, your next step is hiring a qualified wireless systems integrator. In fact, this is the second most common indicator of a project's success, as appropriate VHD expertise is fundamental to accomplishing all other tasks. Qualified integrators can provide you with radio frequency (RF) engineering and related wireless

networking proficiency vital to developing an appropriate capacity plan, assembling an adequate budget, and accomplishing the deployment itself.

Another critical member of your VHD team is a program manager experienced with building construction and IT networking. If your institution lacks such a resource, a competent integrator can supply this expertise.

Program managers fluent in the languages of structures and technologies can help you sort out the unique aesthetic constraints and building construction requirements of large spaces. Plus, they can work fluidly with facilities departments to smooth the deployment phases. In addition, they'll understand the local labor market to help with any nuances surrounding union versus non-union trade rules. Obviously, all of these items have a bearing on budgets, timelines, and other project nuances.

Once your capacity plan and budget are developed, enlist your engineering and program management team members to assist with presentations to management. Your experts can field questions and provide facts about pros and cons of any budget or project adjustments.

Step 3: Understand How VHD Differs from Typical Deployments

For typical Wi-Fi installations, a comparatively small number of user devices tend to be spread out across different floors of a building, which reduces the complex-

ity of designing and deploying WLANs. Conversely, VHD spaces draw hundreds or thousands of people who are tightly clustered into a single, large area. Plus, depending on the facility, each person could currently be carrying three to four devices and, according to analysts, five to seven devices in the very near future. These two attributes—large, highly populated areas with high device densities—create challenges for delivering appropriate Wi-Fi performance due to AP technology constraints and the laws of physics.

First, every Wi-Fi AP has a limited number of device “associations” it can support. This number varies by manu-

ference. While adding external antennas does increase an AP’s signal range, it can also increase AP-to-AP interference. Because of their rich multipath characteristics, many indoor settings make external antennas inappropriate.

As for signal quality, the greater the distance from the target (people and their devices), the lower the signal-to-interference-and-noise ratio (SINR) will be, regardless of whether the antenna is integrated or external. Lower SINR, in turn, reduces the data rate (speed) that the RF link can support. This impacts performance for all users.

To summarize, VHD environments require a greater number of APs, which

- **Work/Study.** These are spaces where users take notes or otherwise work on a device that needs a keyboard, in addition to carrying a smartphone, tablet, or smart watch. Work/study user access needs are intensive, and these users expect high-performance experiences, such as those delivered by 802.11ac at 5 GHz.

- **Fan/Guest.** Currently, these users typically carry only a single device, most often a smartphone. In the near future, a wearable may be common. Regardless, fan/guest users are chiefly concerned with leisure when visiting a VHD facility, resulting in lower performance expectations.



Figure 1. Overhead coverage deployment in lecture hall

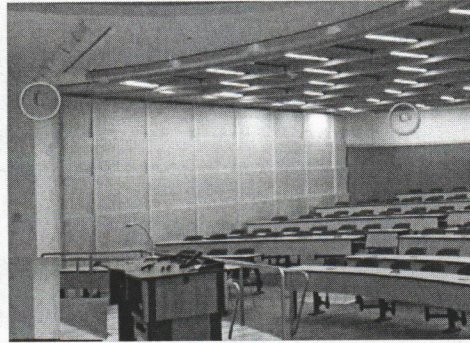


Figure 2. Side coverage deployment in lecture hall

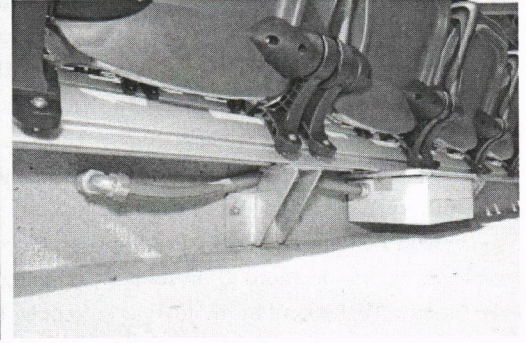


Figure 3. Underseat picocell coverage in stadium

facturer. Let’s suppose an AP is recommended to support 150 device associations per radio. If the AP has two radios, one operating at the 2.4 GHz band and other at the 5 GHz band, then it can support 300 devices.

If your lecture hall holds 1,000 students and they each have four devices, including the ones in their backpacks that wake up every so often to phone home, suddenly you need enough APs for 4,000 associations—and, in the future, possibly 7,000 associations. This means you need approximately 24 APs to support the maximum expected users in the coming years.

The second challenge involves the physics of RF waves. First, RF signal strength decays swiftly with distance, and, second, signal quality is affected by inter-

ference. While adding external antennas does increase an AP’s signal range, it can also increase AP-to-AP interference. Because of their rich multipath characteristics, many indoor settings make external antennas inappropriate.

Step 4: Estimate Each Facility’s Associated Device Capacity

Planning for every VHD project begins with the associated device capacity (ADC), which is the total number of devices your WLAN will be expected to serve. Although the estimated number of devices per person is increasing overall, the extent of the increase depends on the VHD use cases expected in a particular facility. Knowing the use cases in each venue is necessary for calculating ADC. Broadly speaking, VHD use cases are classified as two types:

When calculating ADC for either use case, multiply the seating capacity of the facility by the expected number of devices per person based on the relevant use case.

Step 5: Determine the Best RF Coverage Strategy

Although the same three coverage strategies for mounting APs—overhead (ceiling), side (on the wall), and floor (under or behind seats)—hold true regardless of facility size, determining the right VHD strategy depends on three other factors: physical constraints, performance expectations and cost.

- **Physical constraints.** In addition to structures with poured concrete floors, where wiring cannot be placed behind the concrete, ceiling presence and type

pose other obstacles. Naturally, buildings without roofs, such as outdoor stadiums, can't support an overhead strategy. Spaces with specialized ceilings, such as performance halls with finely tuned acoustics, frequently are poor overhead candidates, in which case a side strategy often provides the solution.

- Performance. As discussed, the farther APs are from the devices they serve, the more the signal degrades, and, depending upon an AP's beam width, interference is introduced. Hence, the drawback to an overhead strategy can be performance reduction. It's a similar issue for side coverage, where performance degrades toward the center of the room due to distance and AP-to-AP interference.
- Cost. Because wiring challenges are eased by the majority of ceiling designs or—in very large facilities—catwalks, the most cost-effective AP mounting strategy is overhead. Floor mounting, whether running wiring from beneath the floor or as conduit attached behind seats, is typically the opposite. Side coverage strategies typically fall somewhere in between. (See Figures 1–3.)

As a rule of thumb, here are the recommendations for the various types of VHD facilities found on most university campuses:

- Lecture halls and auditoriums. Generally, an overhead or side coverage strategy will balance performance, physical constraints, and costs. Either strategy can maximize AP location while minimizing wiring expenses, with the choice in university settings often being determined by physical factors, such as ceiling aesthetics or height.

- Domed athletic facilities. Typically, overhead coverage is optimal, due to the presence of catwalks for mounting APs and running wiring. Plus, these venues primarily support fan/guest use cases, where performance is less critical. High-performance external antennas may be required in this case, depending on ceiling height.

- Open-air stadiums. In many cases, a floor coverage strategy is the most cost-effective way to deliver the fan/guest performance expectation. This is also called a picocell strategy. In some instances, a side coverage strategy can be used by mounting APs on handrails.

Step 6: Address Upstream Infrastructure

Although it's natural to focus on wireless requirements, properly dimensioning upstream networking infrastructure is critical for achieving the desired VHD outcomes. Two particularly important considerations are as follows:

- Robust DHCP/DNS. To ensure that IP address assignments occur rapidly enough in VHD settings, DHCP servers must be ultra-speedy. As transaction times of less than 5 ms are necessary, carrier-grade DHCP servers are strongly recommended, particularly in facilities with more than 20,000 seats.

Properly sizing your DNS server depends on facility sizes. A conservative rule of thumb is one query per seat per second. So, for a university with multiple lecture halls totaling 10,000 seats, this means 10,000 DNS queries per second.

- VLAN Design. Unlike other types of Wi-Fi deployments, VHD environments work best with large, flat VLANs using /16, /17, or /18 subnets. This is due to client device roaming proclivities, which

are controlled by clients and not by your wireless network. Large, flat VLANs help minimize Layer 3 roaming, which degrades overall network performance, by keeping device roaming on Layer 2.

Step 7: Get a Little Help from Your Friends

As you consider all of the elements of VHD design and deployment, there's nothing more valuable than consulting with peers who have been through the process before. Various leading institutions have deployed Wi-Fi in their lecture halls, cafeterias, auditoriums, and sports complexes. Seeking out their advice can improve your readiness and reduce surprises. If you're uncertain where to turn, ask your integrator partner, as they should have appropriate contacts with similar VHD deployments.

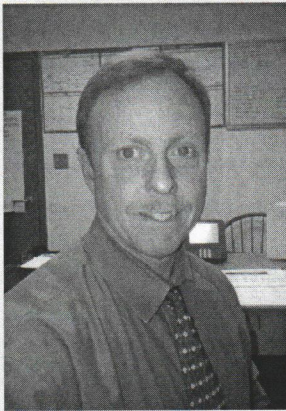
Step 8: Proceed with Confidence

Armed with an understanding of the fundamental considerations for successful VHD environments, you can now seek the assistance of a qualified integrator and begin digging into your projects with confidence. Although VHD setups are far more complex than typical low-density environments, breaking down the component pieces will assist you with making decisions and creating an appropriate budget and deployment plan to match.

*Chuck Lukaszewski is an architect in the CTO office at Aruba Networks, an HP company, where he focuses on maximizing performance of very high-density environments. For more information on very high density network design and deployment, please see the *Very High Density 802.11ac Networks Validated Reference Design*.*

Do a Friend a Favor: Introduce a Colleague to ACUTA

Snapshot



University of
Richmond
Doug West

At the University of Richmond, we are in the process of launching our second classroom master plan. The first plan was implemented in 2004 and was intended to provide guidance and oversight for classroom renovations and technology upgrades for approximately 10 years. The program was viewed as a tremendous success, and as a result, we began planning for the second master plan in 2012. Beyond the details of what the first master plan actually accomplished, one of the most meaningful outcomes was the successful collaborative relationships developed within the working groups and planning committees, particularly the implementation committee.

The master planning process and the resulting classroom renovation projects were truly a campus collaborative effort. The master planning committee was comprised of representatives from the campus executive leadership team, university academic leadership, members of the faculty, and administrative staff members from key areas of the campus involved in classroom maintenance and

support, including facilities, interior design, technology, and the registrar. The master plan committee met with faculty and students and held open meetings for the campus community. The feedback gathered during those discussions with community members was, of course, valuable and factored heavily into the project scopes developed over the next 8 to 10 years.

Our original plan had many goals; but from a technology standpoint, one of our key objectives was standardization. When we began the renovation projects associated with the master plan, about half of our 86 general-purpose classrooms were equipped with some form of multimedia projection capability. By 2012, the master plan scope had grown to include two new academic buildings on campus, labs and specialized teaching spaces, and all of our law school classrooms. The total number of rooms covered under the classroom master plan now numbered 160, and 100 percent of those 160 spaces had been outfitted with multimedia presentation capabilities.

Having accomplished our goals from the first classroom master plan, 2012 was also the time that we began to think about the next plan, and how our goals should be adjusted to consider future pedagogical needs. The second planning process has been even more inclusive and more collaborative than the first. For instance, beyond the focus group participation similar to the first plan, a small core group of the master plan developers went to every academic department on campus and spoke to faculty about their imagined needs in classroom spaces over the next 5 to 10 years. We asked questions about how they might imagine their teaching needs changing in the future and how those changes might impact the types of spaces that they need, or want, to teach in.

Although the master plan document is still in final review before we publish it to the University of Richmond community in the next month, we have actually

been using the information gathered during the master planning process over the past two and a half years to develop our classroom project plans. Most notable are two new teaching spaces that were completed in the summer of 2014.

The collaborative effort between the academic community and the space planners was extraordinary, and the results are two of the most popular classroom spaces on the campus. One of the spaces represents a significant renovation of an older, underutilized auditorium space. The second space was carved out of a large storage area and represents one of our objectives developed as part of the second master planning process—a teaching and learning space that facilitates innovation and different pedagogical approaches in the classroom environment.

As evidenced with the success of our master planning process, collaboration within our campus community plays an important role in the outcome of so many important initiatives; however, building effective collaborative relationships outside of our immediate campus community is also important.

Like many private schools across the country, the University of Richmond participates in a number of consortiums and organizations that facilitate collaborative opportunities between schools. One such relationship for the University of Richmond is with the Virginia Foundation of Independent Colleges (VFIC) and the 15 participating member institutions across the state of Virginia. One of our more recent collaborative projects involves our participation in the VFIC Foreign Language Program, which is designed to support faculty and student interaction at different schools through the use of multipoint video conferencing services.

The Foreign Language Program makes it possible for students at one school to take a foreign language course from another school. For example, the University of Richmond is one of the only schools (if not the only) that teaches

advanced levels of Arabic. Students at other VFIC schools who are interested in an advanced level of Arabic would not have had that as an option two years ago. Now they can take the course from the Richmond instructor and receive the proper credit from their own institution. We are moving into to our second academic year of support for this program, and it is continuing to grow, with more courses being offered and more students signing up as remote participants.

The success of this program depends on many people working together at each of the participating institutions. Not only do the collaboration efforts extend to the individual faculty and students involved in each course, they also include support from the academic leadership at the schools, administrative areas such as the registrar and, of course, the technical staff members working together to make sure the experience of using the technology is a positive one. We are looking forward to growing this program. We see it as a model for other collaborative opportunities with the VFIC and other organizations that promote collaborative work among our peer institutions in the state of Virginia and across the country.

Doug West is assistant vice president, telecommunications, media support, and user services at the University of Richmond and a member of ACUTA's Publications Committee. He is happy to share more details of the master plan if you contact him at dwest@richmond.edu.

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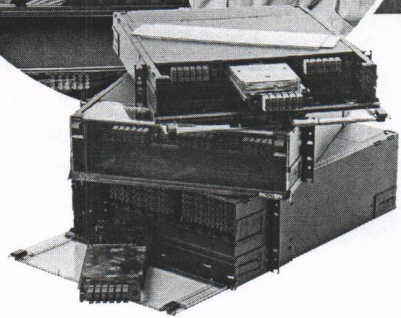
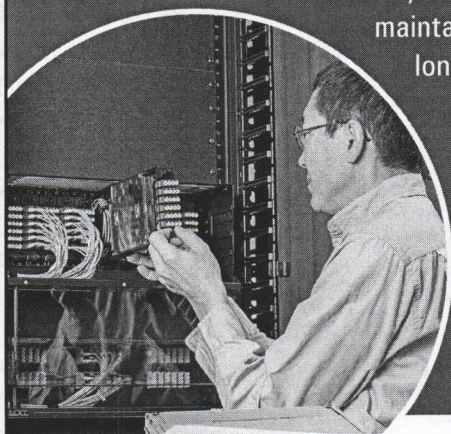


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Serving Up Student-Centric Technology

Three campuses dazzle and deliver

by Curt Harler

Perhaps second only to the prospect of a lucrative job upon graduation, technology drives student expectations in the higher-education market. Students don't just want to know that a college teaches futuristic digital technology. They expect it in their dorm room, in their classroom, and in the common areas.

While some faculty and administrators can be slow to pick up on new technology, students of this generation have been using technology since they crawled out of their cradles. They expect to communicate with one another and their professors electronically. They expect to learn that way, too.

Grand Valley State University (GVSU), the University of Nebraska at Kearney (UNK), and the University of Phoenix (UP) all provide student-facing technology that both dazzles and delivers. The Tech Showcase at Grand Valley State University, Grand Rapids, Michigan, is a great example.

"Our goal is to spark interest and visualize technology," says Eric Kunnen, associate director of e-learning and emerging technologies at GVSU. "It has to be interactive—you have to be able to hold it, use it, try it out."

The project got its kick-start when GVSU put up the Mary Idema Pew Library Learning and Information Commons. "We wanted to infuse technology in the student experience," Kunnen says.

Formally stated, GVSU's Tech Showcase seeks to provide faculty, staff, and students with an immersive and engaging environment to interact, discover, learn, and share how innovative emerging technologies can enhance teaching and improve student learning. At every level, students are a core part of the program.

Whether meeting as a group or socializing in the campus café, students can use the Tech Showcase as a resource for learning.

"There's only so much an instructor can say about a keyboard or a mouse," Kunnen notes, referring to the introductory computer technology class,

CIS-150. "What is cool here is a student can experiment with gesture devices or wearable technology," he says.

By researching and monitoring trends, Tech Showcase strives to identify emerging and innovative technologies that could be applied across GVSU. The overall

goal is to elevate and accelerate the conversation about instructional technology.

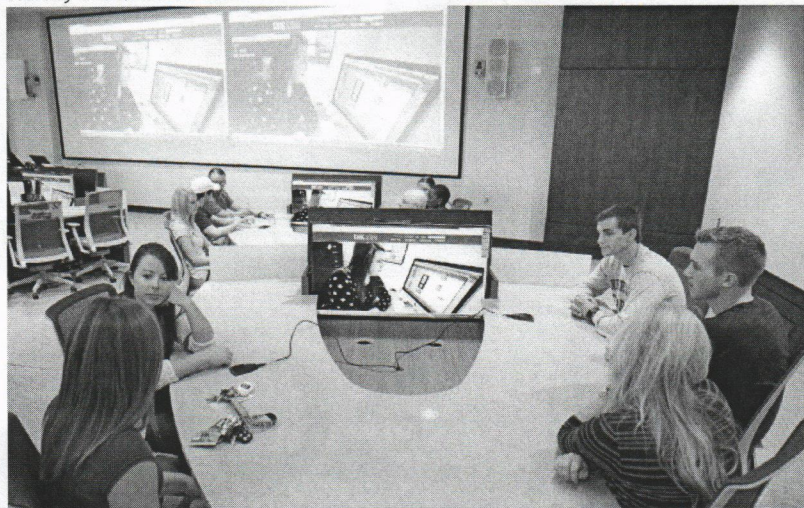
Among the technology GVSU's program is exploring are Sprout by HP, an all-in-one computer with a touch screen and projected work surface; Google Glass and the Google Glass Explorer Program, of course; and Leap Motion, a touchless, gesture computing device that connects with PCs or Macs.

Before Leap Motion, GVSU worked to do a better job of helping students visualize molecules. The result, Kunnen explains, was an Epson 3-D stack projector system that gave the students a 3-D experience of a molecule's structure. That technology was rolled out in the science department.

What may be the next iteration is the Leap Motion controller, developed by Leap Motion, Inc., San Francisco. It is affordable (under \$80) and gives a whole new meaning to hands-on learning. It will allow students to manipulate 3-D objects and complex structures. For example, chemistry students can examine the structure of molecules from the RCSB protein bank using the Molecules program. Or software like Cyber Science 3D can be used to dissect a body, though it has not yet been rolled out for general use. A real student time and labor saver is the Iris Pen, a portable scanner and text reader that scans printed text and automatically reproduces it on the student's computer.

Anyone who has sat around with a yellow highlighter to spotlight key concepts in a textbook will appreciate the ease of transferring highlighted notes to any application with one scan.

Figure 1. Check out the 3-minute video at <https://www.youtube.com/watch?v=aj5NpclvOmE>. Photo courtesy GVSU/Amanda Pitts.



One of Kunnen's favorites is the Swivl personal camera system. Swivl is a good example of allowing students to integrate BYOD (bring your own device) into their learning experience. Swivl sits on a tripod and follows the person wherever they go through a full 360-degree range.

"It is great for group teaching," Kunnen says. GVSU's Graduate School of Education thought so, too. After experimenting with Swivl in the Tech Showcase, the grad school applied for and won a grant to use the technology in its statewide evaluation of students.

"Our graduate students are scattered across the state," Kunnen notes. Using Swivl allows the student to record classroom presentations and share them with professors and evaluators—without either one having to travel. It turns a mobile device into a classroom video solution, following the student as he or she moves around the classroom. It shows how the student interacts with others and will even stop to focus on whiteboards. It will scan a room at the user's command.

Recently, Swivl added an Android OS update, expanding its BYOD portfolio. Other schools are moving forward, too.

UNK's Health Initiative

The University of Nebraska at Kearney will serve as host campus for a collaborative health sciences endeavor with the University of Nebraska Medical Center (UNMC) in Omaha.

UNK will provide the land and buildings that colleges from UNMC will occupy and operate. Telecommunications services will, at least initially, be provided by UNMC. This is the first arrangement of its kind for either university—and UNMC was founded in 1881—and the technology the site houses makes it exciting.

"It will be a pretty neat building with good health-related programs that rural Nebraska needs," says Ryan Rodehorst telecom coordinator at UNK.

"We have the rooms set up so students can do active learning in groups

of six with a 90-inch screen in front of a 24-seat classroom," says Gregory Karst, assistant dean for academic and student affairs in the College of Allied Health Professions at UNMC. The system is built around synchronous, two-way audiovisuals with Web-based videoconferencing. They are deploying Mersive's Solstice software for screen sharing. Any number of users can instantly connect, share, and control the display. It works over Wi-Fi or Ethernet. The classrooms use Office 365 for document sharing.

"It is not earth-shattering," Karst downplays. It is, however, a student-centric program that will make life much easier for rural Nebraskans.

Some instructors were adamant that they be able to see the students at the remote site and that they not be stuck at a podium when lecturing. The system answers both needs.

Rodehorst notes that UNK will offer distance learning, laboratories, VoIP, and other technology at the site. Among the technology features will be 14 simulation areas, including four clinical exam rooms, four control rooms, three simulation rooms, a changing room, a debriefing room, and energized radiography.

The facility, which broke ground in April 2014, opened its doors in July 2015, making the current incoming crop of students the first to use the facility.

Karst says their main goal is to make the rooms usable for interactive learning but also to be user friendly for traditional instruction. To that end, for instance, the 66-seat classroom has a setup where there are six students at each of 11 desk tables. Each table has a display that is on a lift. Students can raise the display so it is part of the learning process, or they can drop it and be able to see the front of the room in a traditional lecture scenario.

"We are responsible for the physical infrastructure at the building," Rodehorst says. "All of the technology will be provided by the medical college." For management purposes, there is some

staff on-site in Kearney (pronounced "carney") from UNMC.

The vision of UNK and UNMC is to build a nationally recognized learning and research environment that promotes education in rural primary care, generates scientific discoveries and new knowledge about rural health, and enhances strategies to promote high-quality primary care in rural communities by creating academic and community partnerships around rural health problems and opportunities.

The Kearney campus has a nursing program in place already, and this program will build on that. At the moment, however, the nursing program does less synchronous and more asynchronous learning. And, since nearly half of Nebraska's physicians, dental professionals, pharmacists, bachelor-prepared nurses and allied health professionals have graduated from UNMC, a lot of people will be watching closely.

With nearly 4,000 students, UNMC draws from around the state. However, a campus like Kearney is two-and-a-half hours from Omaha. Incoming students in the physical therapy and physician's assistant programs were given the option to take all of their classes at Kearney. They never will have to go to Omaha for learning. Each incoming student this fall chose that option specifically and is aware that they will get much of their instruction via technology.

"Their entire education will be at the Kearney site," Karst says. "It was their preference."

In fact, for many students, campus life simply is not part of their education plan.

Most Virtual Campus of All

The University of Phoenix (UP) is probably the most virtual of all higher education institutions. In order to deliver a quality experience for its students, UP was almost forced to adopt a totally integrated approach to technology. This allows students to work with other students, faculty, and outside resources.

“Student-to-student interaction sounds pedantic. But managing it the right way is very important,” says Mike Sajor, chief information officer for Apollo Technology and a member of the president’s cabinet at University of Phoenix. AEG is a publicly traded firm that owns the University of Phoenix (UP). Apollo Technology provides the technical services for UP. “Technology drives our systems and services,” he continues. Sajor says they follow a clear strategy around technology—whether student-facing or in the back office. “We watch our technology ROI very carefully,” he says. He is proud that Apollo and UP are

some trends before they become an issue for students. By analyzing trends and correlating trends and situations with known outcomes, P-Wave lets staff, admissions, or administrators intervene with students who may not even know that trouble looms in their future.

P-Wave processes 500 GB of student behavior data per day. Right now, there are two petabytes of stored data that UP can analyze about successful or troublesome student behavior online.

“P-Wave looks for trends that provide valuable insight,” Sajor says. It is a good example of the home-grown, student-centric technology that UP

prides itself on.

However, Sajor is quick to note that it is the follow-up that makes the difference. “Insight, itself, is not valuable. It is only of value if it causes an intervention,” Sajor says. He finds that analytics that lead to a successful intervention will encourage a student to take another class,

complete a bachelor’s degree, or move on to a master’s degree.

Moving Forward

A survey from University of Phoenix College of Education found that 93 percent of K–12 teachers believe that personal technology devices can link classroom learning to real-world activities. Just under 90 percent say they expect personal technology will be used in most classrooms in the next five years.

If that is true—and there is every reason to believe it is—then in about six years those K–12 students will be heading for their first years in college. They certainly will expect the university to meet or exceed their high school technology experience.

Sajor acknowledges that technology is a treadmill. As much as UP likes to de-

velop necessary software in house, they will purchase SaaS (software as a service) or commercially packaged software if it will do the same job equally as well.

UNMC, too, has several initiatives in the wings. “No matter what you do, by the time you roll it out, the technology has changed,” Karst says. Right now they are looking at virtual reality and immersive 3-D for some rooms.

There always are speed bumps. When they looked at the 3-D initiative, they discovered that the displays all are 3-D capable but the new SDSI network switching does not support 3-D. That technology should catch up soon, but it is a good example of how vexing it can be to try to provide an optimum student learning experience.

Sajor echoes Karst’s view about the constant rollover of technology. Technology goes from innovation to a startup company to a buyout to becoming a commodity, he observes. “The unique differentiator today will be commonplace in five years. Nothing will stop that,” Sajor says. Yet, he says the cycle only affirms the value of innovative software today. “If today’s technology is eclipsed by commercial product, that’s a win,” he continues. “It means lower costs, more efficiencies, and the ability to invest in something new that’s on the leading edge.”

“We need to keep looking for the next wave that will help students,” Sajor says.

Thus, programs like those at GVSU, UP, and UNK/UNMC promise that the future will be bright for students. “We are excited about all of this,” Kunnen says. “It allows us to accelerate the conversation about technology and do it in a way that is highly interactive.”

Curt Harler is a freelance writer and contributing editor to the Journal. Reach him at curt@curtharler.com.

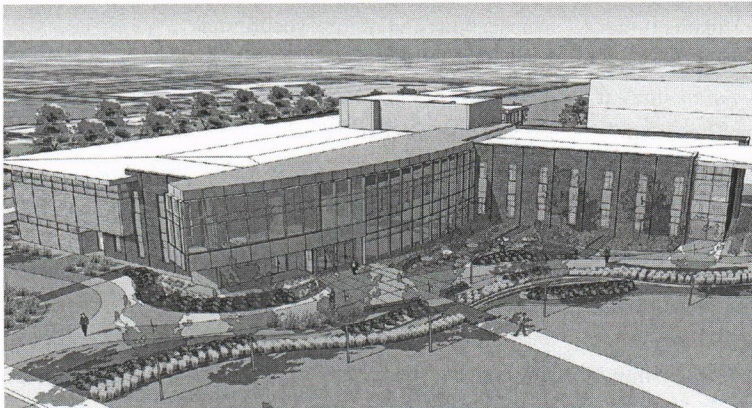


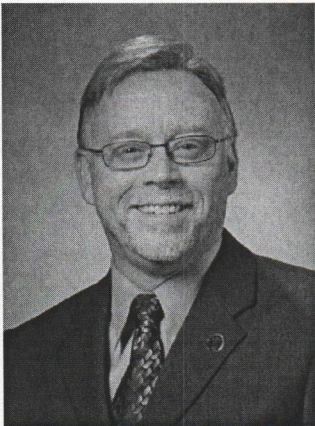
Figure 1. Kearney Building at UNK

on the same page and both understand the role technology plays in providing students the best of education.

In order to allow students to experience real-life scenarios, UP has a huge library of digitally simulated classroom environments. Students studying education, for example, get a three-year subscription to UP’s TaskStream® E-Portfolio system. With E-Portfolio, they can write lesson plans and build projects according to state-specific standards.

Sajor says his favorite technology is an analytic program called P-Wave, which serves students even if they do not use it themselves. Named for the primary seismic wave that causes ground shaking by earthquakes, it is a program that allows UP to “see” possibly trouble-

Snapshot



Centre College
Keith Fowlkes

At Centre College, we have just completed an exciting project using our new open-source, document-management software, Alfresco Community 5. This project was a collaboration between our assistant dean for advising, Mary Gulley; our registrar, Tim Culhan; Virginia Robbins-Bugg in admissions; and Centre College Information Technology Services (ITS). We also engaged Blue Fish Development Group in Austin, Texas, a leading specialist in Alfresco Document Management software solutions. The software that we licensed from Blue Fish was a customized subset of their human resources software, Employee Onboarding Solution.

We call this project our “Student Records Pipeline.” The workflow process takes electronic student admissions records from our admissions software (SLATE from Technolutions), and creates a master records folder structure within Alfresco for each student. The software sorts the student documents of different types into the students’ underlying folder

structure. Then, the software assigns specific departmental-access privileges to each student folder and each underlying folder, based on its category.

For example, each student enrolled for 2015–16 has an application, a high-school transcript, and one or more scholarship award letters (among many other documents). Through our software, the high-school transcript and the application would be sorted into an “Advising” folder, and the award letters would be moved into a “Registrar” folder. Access privileges to the “Advising” folder would automatically be created for the student, the registrar, and that student’s faculty adviser(s) based on the assignments made in our administrative database. The “Registrar” folder is assigned to just the registrar’s access group.

Other folders in the students’ master folder include “Financial Aid,” “Health,” and “Student Life.” Based on the filename, including the record type and the student’s college ID, a sorting folder script automatically files each student’s documents into individual sub-folders and assigns access privileges to the proper department(s) for storage and retrieval.

The partnership between Centre ITS, three central college offices, and Blue Fish Development Group has transformed a costly, time-intensive, and mostly paper procedure to an automated system that takes less than 30 minutes. Blue Fish Development

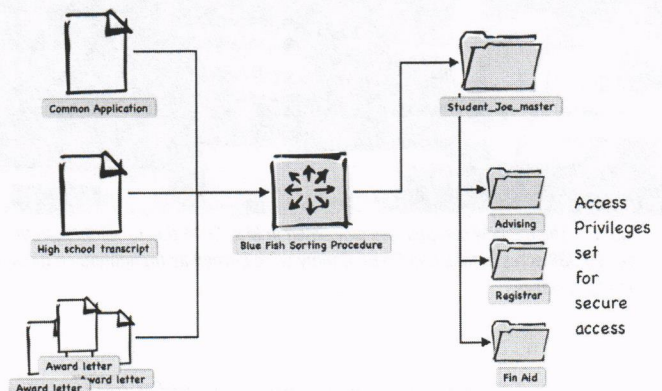
Group worked closely with us on this new use of their HR solution, and they plan to market this solution as a new package to higher-education institutions.

The licensing that Blue Fish Development Group has extended will allow us to adapt their software to several different needs across the college, using our Alfresco Community 5 document management software. We currently plan to use similar extensions of the software in human resources, our library, and the academic dean’s office. The software has unlimited potential in collecting, sorting, and storing documents of all types. We are extremely pleased with the outcome of this joint project and look forward to many other similar projects in the future.

Keith Fowlkes is director of ITS and CIO at Centre College and a member of the ACUTA Publications Committee. Reach him at keith.fowlkes@centre.edu.



Student Records Pipeline Project with Alfresco 5



Preparing for the Unexpected with Emergency Mass Notification Systems

CSUSM meets danger face-to-face

by Jamie Underwood

Being prepared for the unexpected is top of mind for most colleges and universities these days—and rightly so. According to a recently released FBI study on active shooter incidents in the United States, 160 such events occurred between 2000 and 2013, averaging 11.4 incidents annually (an increasing trend). As if that number weren't staggering enough, casualties from these events included 486 killed and 557 wounded.

Potential Gunman Threat

In August 2014, CSUSM put the campus on lockdown following a possible gunman threat. "Our dispatch center received a call that there was a man on campus with a weapon," says Robert Williams, emergency manager at CSUSM. "The decision was made to lock down the campus, and the emergency notification was sent to the campus using our emergency alert button to dispatch."

The CSUSM emergency notification system follows a simple activation process that provides both comprehensive and immediate emergency alert notification across facilities. "When we installed our new emergency notification system, we wanted a system that could be easily deployed in case of emergency," says Williams. "One function of that was to install an emergency alert button

for active shooter situations. One push of the button and all of our emergency-alert devices activate." Notification points check in with the Alertus server periodically to determine whether an alert has been initiated. When CSUSM dispatchers pushed the panic button, the system

disseminated the active alert to multiple emergency notification modalities simultaneously, including spoken alerts via the public address speakers; computer desktop and phone alerting; digital signage display; text, cell phone, and email messaging; and automatic door-lock activation.

A series of emergency alerts was sent out during the search for the potential gunman, with each message providing updated information on the situation at hand and instructions for students, faculty, and staff to shelter in place.

- 1st alert: Lockdown, shelter in place
- 2nd alert: Remain locked down, law enforcement on campus, subject description
- 3rd alert: Remain locked down, law enforcement entering last known area where subject was seen
- 4th alert: All clear

These messages were broadcast and displayed using wall-mounted alert beacons installed throughout the campus, full-screen computer alerting, digital signage display, desktop phone notifications, and cell phone alerting.

"People were saying that while they were locked down, it was nice to continue receiving timely updates," says Williams. "Depending on where they were in lockdown, some said they had access to digital signage, some desktop alerts, some could hear the phone notifications, and most were getting the information via their cell phones (call, text, and email)." Fortunately in the case of CSUSM, the potential gunman was



Figure 1. The CSUSM campus was evacuated in May 2014 due to wildfires in the vicinity. More than 29,388 acres across San Diego County were burned as firefighters continued to fight the fires for 17 days.

Among the worst threats, the unfortunate truth is that active shooter scenarios are becoming more common; and in an effort to prepare for such threats, many colleges and universities—like California State University, San Marcos (CSUSM)—are researching possible solutions.

actually an employee of the university who was carrying a long umbrella that someone had mistaken for a rifle.

In discussing CSUSM's emergency notification process, Williams stresses the importance of having a comprehensive emergency notification system. At CSUSM, a number of emergency alerting devices are installed throughout the campus that allow for comprehensive and immediate emergency alert notification across facilities. Comprehensive notification coverage generally requires a variety of alerting methods to overcome obstacles that may prevent individuals from receiving an emergency alert. Where are people located when the emergency occurs? Do they have access to a computer or mobile device (and is it powered on)? Are they in an area where they can see or hear the alert?

"It was extremely beneficial to have so many options for getting information out to our campus community," says Williams.

Williams also highlights how essential timeliness is when alerting people, noting that the panic button allowed CSUSM to activate a full campus lockdown in a matter of seconds. "In an active shooter situation, you're talking about the difference between people getting notified in a matter of seconds versus minutes when, according to statistics, most active shooter incidents are over in 12 minutes."

Campus Evacuation

Emergency notification systems improve safety and security on campus. Being prepared for the unexpected is important and often includes things such as weather-related threats. Depending on an organization's location, this can

range from hurricanes and tornados to snow and ice storms. CSUSM recently faced a different type of weather-related emergency.

In May 2014, California was suffering from one of the worst droughts in recent years. That, combined with low humidity, high temperatures, and winds that reach 50 to 60 miles an hour, resulted in several wildfires and evacuations. "Out here in California we have these winds called Santa Anas," says Williams. "They're very hot, dry winds that come off the desert and blow toward the coast. So when you get a spark that starts a wildfire, it can spread in a matter of minutes."

Williams explains that CSUSM's emergency management team had been monitoring the news carefully that day because wildfires were popping up all over the county. Soon they started receiv-

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ing calls reporting smoke coming from behind the campus. “Sure enough, the hillside was on fire. You could see the flames start coming up over the hill,” says Williams (see Figure 1). After assessing the situation, the campus chief of police ordered a campus evacuation, and the dispatch team launched an emergency alert.

“Some of the areas around us were also being evacuated, so roads around us were totally impacted,” says Williams. “It took us about an hour to get everyone off campus.” The campus was closed for a week due to local wildfires. Areas surrounding the school were impacted; however, the campus itself did not suffer any fire damage.

Basic Security Features

The challenges universities face are not limited to active shooter scenarios or weather-related emergencies. So what do organizations need to know when

researching and selecting a mass notification system? Williams explains that CSUSM was looking for a system that could not only integrate with its existing emergency notification components but also tie everything together under one solution. “We wanted something that would integrate with our digital signage, door-lock system, and desktop alerts, and interface with SMS alerting to send out text, email, and phone calls.”

Having a system that is compatible with inbound integrators, such as Common Alert Protocol, FEMA’s Integrated Public Alert and Warning System, and alert feeds like ThreatWatch, is useful when exchanging public warning and emergency data among commercial and government third-party alerting systems, sharing data across affiliated organizations and state/municipal alerting authorities, or monitoring the National Weather Service’s alert feed. Likewise,

compatibility with outbound integrators such as third-party emergency notification systems, SMS capabilities, RSS/ATOM syndication, and social-media platforms is important to ensure complete, seamless coverage in the event of an emergency.

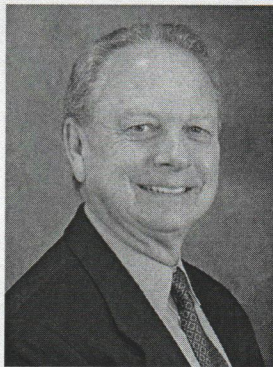
Conclusion

Ultimately emergency notification systems provide a feeling of safety and security even though every school hopes it will never have to launch an emergency alert. It is important to have an emergency notification system and set of protocols in place should an event take place. Emergency preparedness is the first step, and emergency notification systems help schools reach that goal.

Jamie Underwood is Director of Marketing Communications at Alertus Technologies. You can reach her at junderwood@alertus.com.



Snapshot



Univ. of New Mexico
Mark Reynolds

At the University of New Mexico we have collaborated with many different agencies, establishing partnerships that proved invaluable, with a concentration of efficiencies and cost savings. This has expanded to regional partnerships that have provided the same efficiencies and costs savings. Three examples are the following:

- ABQ Giga POP – connecting the universities for high-speed peer-to-peer traffic
- WRN (Western Regional Network) – connecting New Mexico, Colorado, and Utah, for high-speed peer-to-peer traffic

- State of New Mexico and other agencies to bring better services to our higher-education agencies – bandwidth, telehealth, programs, and resources.

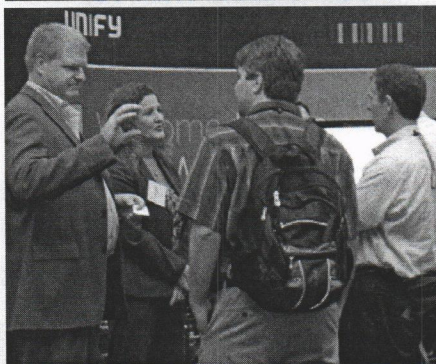
Value adds that we look to ACUTA for are collaboration on projects, lessons learned, savings, resources, funding models, and peers that can help us avoid reinventing the wheel. Not many associations have this level of personal collaboration and mutual respect, which sets ACUTA apart from all the rest.

Attending ACUTA Events Promises an Excellent ROI

In this era of tight budgets, higher-education professionals must often prove the value of educational conferences before attending. We've pulled together some information that will help you demonstrate how attendance at ACUTA events supports your institution's goals.

ACUTA's educational programming is first rate. It allows you to:

- Learn first-hand from industry and higher-education experts who have successfully implemented technology solutions, avoiding costly and time-consuming mistakes.
- Create a professional network of knowledgeable peers and colleagues from other institutions
- Create talking points to communicate more effectively with vendors
- Get immediate answers and solutions to issues within your institution



The Exhibition allows you to:

- See the latest in technology and services, discovering new products that can decrease expenses and increase revenue
- Visit with current and prospective vendors in one location
- Get answers directly from vendors on the exhibition floor
- Comparison shop for the best value

Develop Your Agenda

Clarify the purpose of your attendance. List the things you would like to accomplish:

- Identify current issues at your institution for which you are seeking solutions.
- Research projects you anticipate in the future to get a head start.
- Inquire about developing technologies that might benefit your institution.
- Talk to your vendors about specific issues you are facing.
- Find one idea that will increase revenue and/or decrease costs.
- As your campus looks at implementing a new technology, you will attend sessions that will help you succeed with this implementation.

Make a Presentation to Your Management

You may wish to prepare a formal memo directed to the appropriate manager requesting attendance and why. The memo will be most successful if it focuses on what you will specifically bring back to the institution in return for the investment.

On the ACUTA website, you will find a sample memo and the following talking points that may assist you in making the case to attend. It could read like this:

- ACUTA has been hosting national seminars for many years and serves its membership by providing two specific topics of interest at each seminar and covers an impressive list of hot topics at the annual conference.
- I am going to look for a solution for [this particular problem or issue].
- I believe [this new technology] could benefit the institution, and I would like to learn more about it.
- Our institution will benefit from contacts I make with other schools facing similar challenges.
- The educational sessions at ACUTA events are right on target with our institution's/department's current and future needs.
- Having so many vendors in one place at one time can reduce the time spent while at the office in researching and meeting with vendors, and I will share product information with you and my colleagues in the department when I return.
- I will share the slides from and links to educational sessions with co-workers when I return. (Slides will be available online.)
- I will write a report on highlights from the event and share the key takeaways at a subsequent staff meeting.

Join us for our next event, and you'll head home with a refined perspective on both current and future developments in IT and telecom that will benefit your institution for years to come. That's what we call ROI.

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Track 1. Preparing & Innovating for Tomorrow

Track 2. Enterprise Telephony & UC: Today & Tomorrow

UT San Antonio Encourages Collaboration

The state-of-the-art GroupSpot supports new teaching and learning models

by Pat Scott

When students at the University of Texas at San Antonio need a comfortable place to study with a group, the GroupSpot at the campus's John Peace Library has been their go-to place for the past year.

GroupSpot is a state-of-the-art digital classroom that facilitates team engagement and collaboration. The fully interactive space provides 20 tables and accommodates some 100 students with five laptops and a 46" monitor on each table. Using collaborative software called TeamSpot (www.tidebreak.com), each student is able to share and modify information directly from his or her laptop to the table monitor, editing what everyone sees on a common display. Transitioning easily between personal and shared spaces, students trade files, copy text or graphics from (or paste it to) others' laptops, and explore and

assemble ideas enabled by collaborative learning exercises and flipped classroom activities.

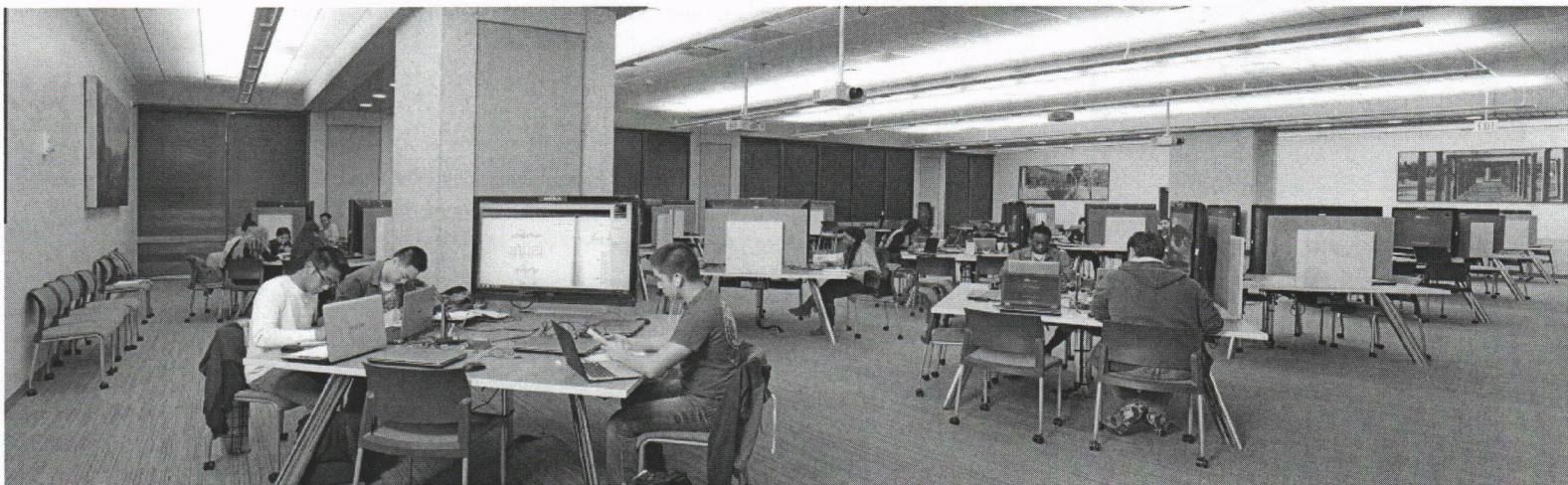
On their website, Tidebreak, producer of TeamSpot, says the software works because it gets everyone participating, accelerates the flow of ideas, and makes information more mobile. Rather than huddling around a small laptop screen and shifting from one computer to another, students remain in their seats and have comfortable visual, as well as functional, access to their common project. Software such as TeamSpot breaks the typical bottleneck of the laptop huddle that gets in the way of effective group-work.

UTSA faculty regularly reserve space at GroupSpot to bring students for special presentations using two retractable projection screens, two wall monitors, and two podiums, each with

a laptop. Interim dean Mary Dixon, PhD, says the faculty love the site. "We do allow faculty to reserve part of the room for a class period that includes library instruction and then for a single instructional use during the latter part of the semester. During dead days and finals, it is open only to students, and we do not reserve it."

Teachers who have used collaborative software such as TeamSpot say they are happy to abandon the traditional method of "sage on the stage" in favor of being the "guide at their side." Students who used to sit at their desks and try to stay awake and focused while the teacher lectured are now actively engaged in solving problems and mastering the content. Technology-assisted collaboration is proving to be a very effective learning process, and it is growing rapidly.

UTSA's GroupSpot is a state-of-the-art digital classroom that facilitates group collaboration.



We asked Dr. Dixson a few questions about GroupSpot, and we are happy to share her responses.

Q. GroupSpot has been open for about a year now. Has it become widely accepted and utilized by faculty and students?

A. GroupSpot has been overwhelmingly popular as a study space and a presentation space. Our students needed space to collaborate on projects, particularly with the increase in cooperative and collaborative learning throughout campus. GroupSpot provides an environment that makes collaborating much easier for students because of the innovative space and the available technology.

Q. Approximately how many students use the facility each week?

A. Use varies depending on the time of the semester, but we find that we have an average of 68 students in the room when it is fully open. (Full capacity would be 100, but it's rare for all groups to have five students at each table.)

Q. Is there a procedure for reserving a table, or is it first come, first served?

A. Tables are first come, first served. We encourage students to collaborate with consideration. We have signage to ensure that one or two students know that another student may join their table at peak times.

Q. Are students required to obtain a referral from faculty in order to use the space?

A. There are currently no services in the library that require referral from faculty.

Q. Is your IT department responsible for maintaining the equipment?

A. The equipment is maintained by library systems staff. It is no easy feat to ensure that all of the equipment is func-

tioning, but our team does an excellent job, and we typically have between 97 and 100 percent of our laptops functioning at all times.

Q. Do you have a dedicated IT staff person?

A. Richard Quini is our systems analyst III, and he does an outstanding job supporting the space. Given the high use, it takes a lot of dedication to make it work. Given that the room is sometimes used for library instruction, Richard has to ensure that all of the computers are ready for a class after a full day or night of student use.

Q. Have you had any security issues?

A. Our biggest issue is students trying to move tables (this would damage the cords). Overall it has not been a major issue.

Q. Are there things you would do differently if you had to start over—with the knowledge that you have now? If so, what?

A. Make another one! I am only partially kidding. We do see the need to increase capacity with this type of collaborative work/study space.

We also might choose different furniture and software, if we do another, to maximize a new space.

So much is now done collaboratively in the cloud, that a review of what software we need for collaboration might reveal better options.

Q. What has been the greatest benefit of this space?

A. The students have a space in which they can study and work on group projects together and not be in earshot of those who need to have independent and quiet spaces. The room is spacious, which

makes it a different learning space than a small study room.

Librarians have a place to do hands-on instruction that can then be turned back over to the students when they are done so we can maximize our space use for student benefit.

Q. What has been the biggest challenge?

A. Staffing the space takes a lot of resources. The technology needs a lot of care. Students also can get pretty untidy when they collaborate for long periods. We need to do a lot of cleanup to keep it a pleasant environment. We do allow food and drink throughout our library, and we have a food court downstairs.

Also, balancing the opening and closing of the space takes a lot of work. Great study and work spaces are in high demand, and we have to ensure that we keep a focus on how the library can maximize our spaces and resources.

Q. What are your plans for the future of this space?

A. We intend to expand. We have added another smaller collaborative space called "TeamSpace" and are now looking at other spaces that might be used for the same purpose. Collaboration is an essential skill, and we need to ensure that we provide spaces that enhance that learning experience, in a way that is balanced with the needs for independent and quiet study.

Thanks to Mary C. Dixson, PhD, interim dean, UTSA Libraries, for answering our questions. For more information, you can reach her at mary.dixson@utsa.edu.

Pat Scott is ACUTA's communications director and editor of the ACUTA Journal. Reach Pat anytime—especially if you have a story for the Journal!—at psscott@acuta.org.

by Cathy O'Bryan
Todd Herring
Sarah Engel

IU Knows the Value of Partnerships

Planning and nurturing partnerships delivers unmistakable value

In today's ever-changing, disruptive technological ecosystem in higher education, the IT landscape changes rapidly. The institution's academic, research, and outreach missions require technologists to provide specialized services, while balancing diverse needs against a value-driven economic imperative. Leveraging enterprise services to achieve economies of scale is essential. However, achieving leverage across disparate and diverse institutional units requires that all IT professionals be aware of—and recognize the value of—those enterprise services and products.

The challenge to successful implementation and management of enterprise services is two fold. It revolves around both the technical intricacies required to create a flexible and reliable service stack and the adoption of those same services by vast numbers of clients across the institution. The latter requires collaboration, communication, and a trusted partnership between enterprise and edge IT staff (e.g., central and distributed technical staff) and functional experts.

Partnering Requires Planning

At Indiana University, CIO Brad Wheeler leads IT staff across all eight IU campuses, supporting approximately 114,000 students and 20,000 faculty and staff. University Information Technology Services (UITS) is the central IT organization, with approximately 700 staff. The remaining "edge" IT staff, spread across 106 unique IT shops, directly support hundreds of separate academic and administrative units on the IU Bloomington and Indiana University-Purdue University Indianapolis (IUPUI) campuses.

Partnering with these 106 units demands systemic planning. Building relationships and trust requires a commitment by UITS to provide services that are informed by specialized needs and expertise. When possible, UITS also needs to offer these services at no cost to the units or to offer a high-value proposition. Adoption is the final key to success.

Within UITS is a group known as IT Community Partnerships (ITCP). ITCP strategic analysts spend their time working with edge IT staff to build a professional community that:

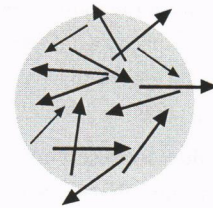
1. Recognizes strength in diverse perspectives
2. Values communication and shared knowledge
3. Builds relationships and trust to break down boundaries
4. Maximizes the strengths of both the central and edge IT shops
5. Leverages resources as if there were no organizational boundaries

By meeting face-to-face with many edge IT staff, ITCP begins to see patterns. Feedback leads to service improvements, such as simpler pricing models and more transparent communication. For example, by pooling collective needs for resources like digital signage and survey tools, ITCP has enabled positive financial outcomes—enterprise license agreements for the former and preferred pricing for the latter.

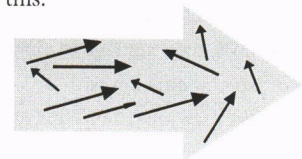
Partnership across IT shops must be built and nurtured in order to efficiently use limited resources, reduce duplication, and commoditize IT service options (where appropriate)—all while reducing the technical risk footprint. These new models of management must be capable

of efficiency and flexibility, and leverage what is best in breed within local IT resources and enterprise-level options. IT management models are no exception, and innovative design can offer new paradigms for collaboration.

ITCP enables the best knowledge, accessibility, and utilization of institutional resources. The group's mission is to continuously transition technical service creation, adoption, and utilization from this ...



to this.



The former situation, where each unit creates its own set of services or selects its own vended options, is fraught with inefficiency and duplication of effort. However, this diaspora of service selection is often a direct result of edge IT needs that are unmet by current enterprise services. UITS must be aware of these needs before they reach critical mass. This requires opportunities for IT professionals across IU to communicate on an ongoing basis, and such opportunities must lead to strategic interactions that encourage partnership.

Communication Is Key

ITCP strives to create a virtual and physical set of water-cooler interactions for IT

professionals across IU. These include:

- Face-to-face meetings, including lightning-round presentations by UITs and edge IT staff
- Virtual and in-person infoshares (offered multiple times in the year) on new services, key updates, and emerging trends
- Announcements crafted by ITCP and UITs service providers to ensure that urgent information is shared in a timely and concise manner
- Several one-on-one meetings with leaders of the 106 IT edge units each year

IU's IT strategic plan, "Empowering People," clearly states that "UITs should expand its formal and informal engagements with the IU community to ensure continuous, timely dialogue and flow of information to effectively adapt IT services to user needs." ITCP is an important facilitator. However, three other formal UITs organizational approaches also support this action item.

First, the One IU IT Leadership Council (1IUITLC), chaired by the UITs associate vice president (AVP) for client services and support, meets monthly to strategize around key projects, needs, and innovations. As UITs and school/departmental IT pros are truly one extended team at IU, the name is important: One IU IT! This close partnership provides essential input and feedback for assessing university-wide IT support and services requirements, resource usage, and the user impact of implementing various initiatives.

Continuing to strengthen this partnership is essential for an increasingly digitally enabled university. The 1IUITLC is chartered to be a representative, forward-thinking group of IT directors, managers, and staff that embodies the collective voice of university IT support professionals. It is well positioned to collaborate on strategic IT partnerships university-wide, and ultimately improve IT services and support at IU. The council serves in an essential advisory capacity to the AVP for client services and support and the office of the vice president for information technology and CIO.

Second, the Student Outreach program within ITCP is intended to help faculty and students become more comfortable with many of the new and most popular UITs technology services (e.g., IUanyWare, lynda.com, AskIU, One.IU, and Box). In response to faculty or staff requests, the Student Outreach program can arrange:

- Concise in-class presentations
- Partnerships with academic departments for special events, meetings, and consulting hours
- Participation in student-focused events (e.g., orientation, welcome-week activities, preparation for courses that require technology)
- Tabling events
- Presentations and special programs at living-learning centers or residence halls
- Face-to-face encounters with students at the times and locations they are more likely to need help (e.g., libraries, study areas, bus stops)
- Outreach to student organizations (undergraduate and graduate groups)

Last year, the Student Outreach team focused on wireless connectivity across IU. A team of students specially trained as end-user specialists held dozens of informational tabling events to speak with peers about IU Secure, the wireless network for the IU community. As a result, they were able to:

- Help students connect their devices to the network
- Gather feedback regarding student experiences with IU Secure
- Promote the best uses of the service
- Aid the UITs Campus Network Engineering team by collecting data on wireless issues using specialized devices
- Participate in the marketing of IU Secure

Finally, within the Client Support department is a unique unit, IT Management Services. This unit provides IT managers and staff to edge units on a contractual basis. Currently, UITs successfully manages school-based IT services within the School of Engineering and Technology at IUPUI and the

School of Environmental and Public Affairs at IU Bloomington. UITs co-manages the IT staff in collaboration with the dean of each school. Both schools have a different model of partnership and funding due to their unique technology needs, cultures, and existing systems.

The Inside Edge

While UITs has in-depth experience and knowledge of enterprise-level resources that can be leveraged by schools and colleges, it often lacks the academic perspective on how to best implement these choices within disciplinary units.

Similarly, school and college IT staff are often spread thin—focused on a diverse set of services within their area, they lose sight of centrally offered services that can be leveraged to reduce their burden.

Both can gain much from a partnership that informs the cultures and has the authority to implement changes. In fact, within the Client Support department we refer to this management model as our "inside edge." These managers and staff enable UITs to hear directly, frequently, and objectively from the edge. Their insights are invaluable in helping us determine how best to design and implement enterprise services.

Conclusion

In closing, one last caution: Despite these formalized models for partnering with school and departmental IT professionals across the university's vast IT landscape, it is critical to remember that relationships and partnership are everyone's job. The ITCP model and other strategic efforts must be supported by a culture that values, builds, and constantly encourages UITs staff to reach out, engage, listen, and learn.

Cathy O'Bryan is director of client support, University Information Technology Services, at Indiana University. She is also currently an ACUTA director-at-large.

Todd Herring, manager, IT Community Partnerships, University Information Technology Services, Indiana University

Sarah Engel, editor-in-chief, IT Communications, University Information Technology Services, Indiana University



*Thank you for reading
our Journal!*

We hope you found the new digital format convenient and enjoyable and the content interesting and useful.

We welcome your comments at any time.

If you would like to share a story with our audience, please contact Pat Scott, ACUTA Communications Director, at 859-721-1659 or [pscott@acuta.org](mailto:pスコット@acuta.org).

Our *Journal* for 2016 will focus on the following topics:

Spring: It's an Emergency!

Summer: POTS and PANs: What's Cooking in the IT Kitchen?

Fall: The Value of IT

Winter: 2020: Vision of the Future