Every day, Penn State IT supports students, faculty, and staff at the University. This site captures some highlights and accomplishments from the past year.

TAKE A LOOK >
Penn State IT has had a busy year—all 1,500 of us. Spanning more than sixty units from across the University, staff in Penn State IT spent the year leading and embracing change, reimagining the ways we work, fostering a talented and diverse community, and continuing to deliver the IT services that help the University remain competitive.

Supporting students, faculty, and staff at twenty-four campus locations and the Penn State World Campus is not only something we love to do, it’s integral to the teaching, research, and service mission of University. We take our responsibilities seriously, and as the technology needs of the institution and its community shift—today and in the future—we are striving to be flexible enough to change along with them.

We are establishing a Service Management Program to streamline the delivery of IT services, exploring and investing in the latest tools for teaching and learning, and taking measures to protect our networks and digital assets against external threats, among a host of other initiatives, many of which are highlighted in this year’s report.

I hope you enjoy the read!

Kevin Morooney
Vice Provost for Information Technology
The Information Technology Leadership Council (ITLC) is a community of more than eighty leaders that supports IT planning efforts, fosters collaboration, and guides the delivery of services that support Penn State's mission. The following individuals are directors and managers in their respective fields and are the foundation of IT leadership across the University.

Shelly Aina  
Educational Equity

Jan Barnoff  
Office of the Corporate Controller

Mark Bodenschatz  
Intercollegiate Athletics

Ginger Breon  
Smeal College of Business

Loren Brewster  
Penn State York

Rhonda Brown  
Services and Solutions

Steve Cady  
Penn State Bookstore

Adam Caimi  
Outreach Information Technology

Tom Canich  
College of Earth and Mineral Sciences

Caroline Chronowski  
Penn State Wilkes-Barre

Jerry Ciolkosz  
College of Engineering

Todd Clouser  
Office of the University Registrar

Dave Cochrane  
College of Education

Rick Coons  
Office of the Vice President for Commonwealth Campuses

Lori Cottrill  
Graduate School

Ron Dascenzo  
College of Communications

Phil Devan  
Telecommunications and Networking Services

Justin DiMatteo  
Penn State Brandywine

Fred DiMuccio  
University Police and Public Safety

John Domico  
Department of Computer Science and Engineering

Wayne Figurelle  
Institute for Cyberscience

Carol Findley  
Office of the University Registrar

James Foreman  
Penn State Abington

Ken Forstmeier  
Administrative Information Services

Dace Frievalds  
University Libraries

Ted Froats  
Penn State Beaver

Pam Fuller  
IT Planning and Resources

Matt Gardner  
Penn State Law

David Gindhart  
Office of Sponsored Programs

Lisa Glass  
Penn State Berks

Gary Grgrurich  
Office of Internal Audit

David Gribble  
Penn State Greater Allegheny

Craig Gruneberg  
College of Health and Human Development

Brian Hallberg  
Applied Research Laboratory

Brian Hart  
Penn State DuBois

John Harwood  
Office of the Vice Provost for IT Security Operations and Services

Ed Hinkle  
The Office of Student Aid

John Hoh  
Penn State Harrisburg

Huoy-Jii Khoo  
Office of Physical Plant

Jim Leous  
Services and Solutions

Greg Madden  
Eberly College of Science

Rick Marboe  
Applied Research Laboratory

Mairéad Martin  
Services and Solutions

Seth McGeorge  
Dickinson Law

Ed McGowan  
Student Affairs

Jeff Medvec  
Penn State Fayette

Christine Mencer  
Penn State Hazleton

Christopher Millito  
College of Information Sciences and Technology

Sean Moeller  
College of the Liberal Arts

Tom Moore  
Development and Alumni Relations

Mike Morgan  
Penn State Lehigh Valley

Kevin Morooney  
Office of the Vice Provost for IT

Marilee Mulvey  
Penn State Worthington Scranton

Steve Neeper  
Office of the President

Joanne Peca  
Penn State Altoona

Abbey Philip  
Penn State Great Valley

Doug Prawant  
Penn State Mont Alto

Rick Ramsay  
Office of the Bursar

Ron Rash  
Information Technology Services
RESEARCH
//Harnessing the power of technology to drive discovery and innovation

SHOPPING
through the lens of IT

By: Katie Jacobs Bohn

Penn State researchers are working on new smart cameras to help the visually impaired.

Standing in the grocery store, you scan the peanut butter jars looking for the one on your list. Your eyes flit from label to label until they land on the familiar red, blue, and green jar, and you reach to pick it up and place it in your cart. Then, it's on to the next item on your list.
Picking something up at the grocery store seems simple, but it’s a task that relies heavily on your sense of sight. You need to find the right item, pick it up, and then place it safely in your basket. But for those with visual impairments, it’s a task that’s often difficult or impossible for them to do on their own.

To help make shopping easier for the visually impaired, Jack Carroll—a Distinguished Professor in the College of Information Sciences and Technology (IST) at Penn State—has completed a study that explored how smart cameras could eventually guide visually impaired shoppers to find the items they need. Carroll worked on the study with Mary Beth Rosson, interim dean of the College of IST, as well as graduate student Jake Weidman as part of a $10 million National Science Foundation-funded project that’s seeking to replicate the human vision system using information technology (IT).

“This is one of the biggest computing projects Penn State’s been involved with,” Carroll said. “I’ve been working with what we do with the technology after the camera is available, specifically in a shopping scenario. Shopping is so universal, and it signifies normalcy—it’s important that the visually impaired be able to do it, too.”

The project—dubbed Visual Cortex on Silicon—is led by Penn State Computer Science and Engineering Distinguished Professor Vijaykrishnan Narayanan, and Penn State is the lead university alongside seven other universities.

“A major goal is advancing the technologies available for the visually impaired.”

“This project brings together the strengths and efforts of technical leaders in multiple disciplines,” said Narayanan. “It draws on the expertise of several industry and national lab partners. A major goal is advancing the technologies available for the visually impaired.”
Visual Cortex on Silicon aims to create sophisticated “smart” cameras that will replicate or even surpass the abilities of the human vision system, which can interpret complex scenes and complete complicated tasks while using less than twenty watts of power. The cameras will be used in mobile devices, such as smartphones, so energy efficiency is key to fitting a complex system into a small piece of hardware.

Researchers—who are each tackling individual pieces of the larger project—hope the cameras will not just be able to record images but also interpret them. For example, the cameras will not just recognize an item as a jar of peanut butter but also be able to determine whether it’s the specific kind the user needs—a scenario that was the focus of Carroll’s study.

Carroll and his team mocked up a grocery aisle in his lab, complete with food and other items filling the shelves. He wanted to see how the visually impaired participants would interact with the camera, which would scan the items on the shelves and alert the participant when the item they were searching for was near.

But, since the new cameras haven’t been finished yet, an actual prototype wasn’t available to test. So, Carroll and his team used the “Wizard of Oz” technique, in which the participants interact with an apparatus that’s being controlled by an out-of-sight person. “In the movie, the wizard was actually an illusion controlled by a man behind the curtain. These types of experiments are similar,” said Carroll. “For this one, the cameras aren’t ready so we had to simulate how they might work in the future. It allows us to see how participants would interact with the camera and tweak any problems that arise. We don’t want to wait until the cameras are finished being developed and then start from scratch on the apparatus.”

Participants strapped iPods on their foreheads that would send a video feed of the shelf to a graduate student who would then list the items currently in view. This simulates what they would eventually be able to do with one of the new cameras.

Once the participant knew they were standing in front of the item they needed, the next step was guiding them to pick it off the shelf. This proved a bit more difficult than the first step.
“At first we tried using verbal cues to help them locate it—‘higher’ or ‘lower,’ for example, as the participants moved their hands,” said Carroll. “This worked well, but we didn't want to stop there and are also looking into other guiding methods.”

Carroll is now investigating a method using haptic sensors, which give tactile feedback through vibration. The “buzzes” would become stronger as the participants’ hands got closer to their desired items. Carroll says he likes this method because a lot of speech is needed for even small directions and other people's speech can interfere with feedback.

“Jack's work is key because it enables the new cameras being researched and built in this project to meet expectations and understand what kind of assistance visually impaired people will need from these new technologies,” Narayanan said.

Shortly after Carroll’s study was completed, the Visual Cortex on Silicon team was able to use research completed by other team members on hardware design and vision algorithms to build an actual prototype of the apparatus. The team demonstrated the system at the project’s annual review.

Narayanan says the Visual Cortex on Silicon project—which is funded through September 2018—came about after a previous effort designing cameras.
“In a prior project, we used brain-inspired algorithms and configurable architectures to detect and track objects for aerial cameras,” Narayanan said. “The system was more energy efficient compared to other current approaches, and it made us want to work toward cameras that are applicable across a wider spectrum of vision-related tasks.”
The group of engineering students is getting rowdy.

Gathered in the Design Analysis Technology Advancement (DATA) Laboratory at Penn State University Park, they joke and laugh as they prepare their virtual reality demo, teasing, and poking fun at each other. A nearby microwave sports a sign reading, “For Food Only,” hinting at the type of mischief the room has seen.
But the students are definitely serious about their studies. When it comes to the project—funded by a Center for Online Innovation in Learning (COIL) Research Initiation Grant—they're working on with assistant professor of engineering design and industrial engineering Conrad Tucker, they're all business.

The students have been working with Tucker all semester to experiment with such immersive virtual reality (IVR) systems as the Oculus Rift and how these systems may enhance student learning—both on campus and online. Tucker hopes IVR technology can eventually give students taking online courses a way to become more engaged in their coursework.

“Online learning gives us huge opportunities in higher education. You can connect with more diverse people across greater distances, for example,” Tucker said. “But online courses also limit you in some ways—there’s little immersive or tactile interaction, and sometimes it’s hard for students to engage with the material. IVR systems are a potential solution to that problem.”

The students have finished setting up their demo. Owen Shartle, an engineering student, straps the IVR headset over his eyes and slips a haptic glove—a device that allows a user to interact with the virtual world—over his hand, making his extremity look Transformer-esque.

"You know that you’re not really in this new place, but in some ways you are.”

The headset transports him into an immersive, 3-D world—today, it’s a traditional classroom with chairs, tables, and a blackboard. The glove, still in its prototype phase, will enable him to pick up the pieces of a coffee maker scattered across the virtual table and assemble them in a much more natural way than using a joystick or keyboard controls.
With the exception of the IVR headset, everything is student made. The group designed the simulations—the coffee pot exercise, as well as a giant game of Jenga—with the software Unity3D. They also designed and built the haptic glove, which has gone through at least two versions, from scratch.

Bryan Dickens, a senior majoring in computer engineering, watches his classmate maneuver through the virtual world. He describes wearing and using the IVR device as similar to lucid dreaming.

“You know that you’re not really in this new place, but in some ways you are,” he said. “You can look around and see things that seem real. You’re moving yourself through a different world, and that’s what the virtual reality device is aiming for.”

The technology isn’t just cool, though. It’s doing what Tucker hoped it would do: it helps students learn.

Tucker recently completed a study that found the device significantly improves a student’s performance completing a task when compared to doing the same activity in a non-immersive computer program—just playing the simulation on a flat screen and with traditional controls like a keyboard.

Tucker used the coffee pot simulation to time and compare how long it took fifty-four undergraduate engineering students to assemble the pot. The students were randomly split into two groups: one group completed the task using the IVR headset, and the other used a non-immersive computer program.

The median time it took the Oculus Rift group was 23.21 seconds, while the median time of the second group clocked in at 49.04 seconds—more than double.

Tucker said there could be many reasons for the difference.
“Immersive virtual reality systems like the Oculus Rift have many benefits,” he said. “But one of the major ones is that when compared to the non-immersive system, IVR systems give you a much more natural experience. It’s like you’re actually there.”

Tucker said that in an online class, where a student may be isolated from the instructor and other students, this ability to be virtually immersed in another environment could be invaluable. Instead of just staring at a flat computer screen, students could be transported to a more traditional classroom environment or to another continent.

“Moving forward, we’d love to work with students in other countries,” Tucker said. “Oculus Rift and other similar technologies allow you to sync your devices with others regardless of location and work on the same project. You can always Skype with people around the world, but you don’t get the same experience. This technology would allow you to collaborate with others all over the world.”

Tucker said students could even be teleported back in time. Instead of just reading about an important battle in history class, students could strap on their IVR headset and experience the battle in person. (Well, almost.)

“With research, you’re building something that will last and be built upon.”

Dickens, who graduated in May and is now a program manager at Microsoft, said his research experience with Tucker was essential to his education and success.
“With research, you’re building something that will last and be built upon,” said Dickens. “If the world’s knowledge of a subject is a circle, when you research with a cutting-edge technology like the Oculus Rift, you are working at the edge of the circle—pushing it further to expand its size. This kind of inventive work has helped my education more than any class could have.”

And in Tucker’s project, expanding that circle has also expanded Tucker’s original expectations. He said that while he was always hopeful, he was also a bit skeptical going into the project. But after seeing how positively Dickens and the other students reacted to the technology, that has since changed.

“When you see how student performance improves while using the device, it shows you how much potential it has to enhance online learning,” said Tucker. “And now, Penn State has a real opportunity to be a leader in this space. It’s very exciting.”
Penn State Fayette computer upgrades
Penn State Fayette implemented several technology upgrades over the fiscal year, including six Apple TV units installed in technology classrooms, the expansion of an iPad loaner program (which enables students, faculty, and staff to borrow iPads for projects), and the completion of a two-year project to move all computer labs to Cooperative Lab Management (a central IT service that helps units manage computers).

LabChat
Penn State’s LabChat service provided students, faculty, and staff with real-time technical assistance via online chat when a computer lab consultant was not available in person. During the fiscal year, Penn State York and Greater Allegheny joined the service, which now serves eighteen Penn State campuses and eight academic units.

Active learning spaces
To help faculty and students transition from traditional-style lectures to “flipped” classrooms in which the typical lecture and homework elements of a class are reversed, Penn State Harrisburg opened active learning spaces across campus. For very little cost, these new active learning spaces will enable faculty to test different teaching styles by using flexible seating arrangements and multiple whiteboards and projectors for collaborative group work.

Tutor.com project
A collaboration with Tutor.com will help Penn State World Campus deliver personalized, one-on-one learning sessions to online students in forty subjects ranging from math to nursing. During the spring 2015 pilot, Penn State students were able to access the 24/7 tutoring resources through an integration with ANGEL.

Stats

<table>
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<tr>
<th>lynda.com</th>
<th>Residence hall wireless</th>
<th>Microsoft Office for students</th>
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<tbody>
<tr>
<td>17,000 students</td>
<td>4,290 access points</td>
<td>$990,000 in savings for students.</td>
</tr>
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During the fiscal year, more than 17,000 students, faculty, and staff members completed about 39,510 hours of online training through lynda.com. Since its rollout in 2009, lynda.com has enabled the Penn State community to access thousands of video tutorials—on such subjects as coding, photography, business skills, and résumé writing— at reduced rates. Through Penn State’s contract, the University pays $1.45 per full-time student, faculty, and staff member. Independent of the University, an annual membership costs $350 a year.

A two-year project to install wireless in all residence halls managed by Housing and Food Services was completed. The investment in these facilities will help provide students with a consistent mobile experience and enable them to attain their academic goals while at Penn State. To complete the project, nearly 4,290 access points were installed in 138 buildings at Penn State Altoona, Berks, Beaver, Behrend, Greater Allegheny, Hazleton, Harrisburg, Mont Alto, and University Park campuses.

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<tr>
<th>Faculty Activity Insights System</th>
<th>Technology classrooms and computer labs</th>
<th>TLT Fellows</th>
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<tr>
<td>20</td>
<td>2,900</td>
<td>5</td>
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The Eberly College of Science and College of Engineering became the two newest colleges to adopt the Faculty Activity Insights System (FAIS). The FAIS enables faculty and support staff to manage information for faculty activity reporting, annual reviews, promotion and tenure dossier generation, and more. By the end of the fiscal year, about half of the University’s faculty members across eleven colleges and academic units at twenty campus locations used the system.

Students, faculty, and staff used more than fifty Information Technology Services (ITS) computer labs at University Park for class work and teaching. In total, there were more than 2,900 computers in 411 lab and technology classroom locations throughout campus.

Each year, a new cohort of TLT Fellows is chosen to pursue a specific project related to teaching and learning at Penn State. In spring 2015, five new TLT Fellows (Ronnie Godshalk from Penn State Brandywine, Laurie Grobman from Penn State Berks, Tim Simpson from the College of Engineering, Rayne Sperling from the College of Education, and Conrad Tucker from the College of Engineering) were introduced to explore such topics as undergraduate research, digital badges, wearable technologies, virtual reality, and 3-D printing.

During the fiscal year, more than 17,000 students, faculty, and staff members completed about 39,510 hours of online training through lynda.com. Since its rollout in 2009, lynda.com has enabled the Penn State community to access thousands of video tutorials—on such subjects as coding, photography, business skills, and résumé writing—at reduced rates. Through Penn State’s contract, the University pays $1.45 per full-time student, faculty, and staff member. Independent of the University, an annual membership costs $350 a year.
More than 88,000 students and 8,300 faculty and staff members used ANGEL, Penn State’s learning management system, across 14,000 active course sections during the fiscal year. In addition, a responsive footer that notifies users of announcements, course mail messages, newly graded items, and discussion forum posts improved ANGEL’s usability on mobile devices.

Students, faculty, and staff from across Penn State participated in a pilot of the Canvas learning management system (LMS) as part of the University’s membership with non-profit technology consortium Unizin. The pilot—comprised of 2,415 students, 63 faculty, and 60 instructional design and support staff in eighty-one course sections from sixteen campuses and ten colleges—evaluated the LMS’s mobile features, grading capabilities, email and text message notifications, and more. In 2017, ANGEL will reach its end-of-life date and no longer receive operational support from parent company Blackboard.

The annual Learning Design Summer Camp at University Libraries brought together more than 150 Penn State students, faculty, instructional designers, multimedia specialists, and librarians from more than fourteen campuses to discuss a range of course design strategies. The camp featured panel discussions, interactive activities, and breakout sessions on such topics as student motivation, approaches to course design, learning analytics, technology tools, and the future of education technologies.

Sites at Penn State gives students, faculty, and staff the ability to build websites, blogs, and portfolios through WordPress, a blogging platform. During the fiscal year, the service had approximately 51,000 users and 27,000 sites, with 27,000 new users and 14,000 new sites added throughout the year.

The Click! Technology Jumpstart Guide provided new and current students with go-to resources for staying secure online, getting computer help, connecting to the wireless network, and much more. More than 22,500 guides were distributed during New Student Orientation, at International Student Orientation, and at IT Service Desk locations at every Penn State campus location.

The mobile portal that connects Penn State students, faculty, and staff with mobile campus maps, event details, a schedule of courses, library information, emergency alerts, bus schedules, and more served approximately 43,000 requests during the fiscal year.

The Penn State community initiated an average of more than 5.1 million transactions per month on eLion, Penn State’s web-based service that provides students, advisers, faculty, and parents with secure, real-time access to academic and financial records. In addition, the eLion team worked to increase system response times during the start of the spring 2015 semester—one of the heaviest traffic periods of the year—resulting in 60 percent fewer calls to the IT Service Desk when compared to the first week of classes in fall 2014.

Penn State Mont Alto replaced forty-two computers with brand new machines in two of its student labs. The new all-in-one computers will give students larger (twenty-four-inch) monitors while freeing up desk space.

More than 255 faculty and staff from thirteen Penn State campus locations attended SummerFest, which provides technology training sessions for faculty and staff who teach and support for-credit courses. Sessions were offered on such topics as accessibility, ANGEL, iPads, Qualtrics, and Sites at Penn State and were delivered via Adobe Connect to increase University-wide participation.
The annual WinterFest technology training event offered free online technology training sessions on such topics as Sites at Penn State, accessibility, Qualtrics, and Doceri to more than 300 Penn State faculty and staff. As part of the event, The Schreyer Institute for Teaching Excellence, ITS Training Services, and TLT offered an interactive, self-directed learning series focused on new approaches to increasing learner engagement.
Sometimes one mile can be one mile too far.

It was only one mile that separated Cybersonics Inc. from Penn State Erie, the Behrend College, in 2009, but according to Jeff Vaitekunas, vice president of research and development at Cybersonics, being located across the highway from the University just wasn’t cutting it.

“I looked across that street, and when I saw those buildings I knew there was a great opportunity,” he said.
I looked across that street, and when I saw those buildings I knew there was a great opportunity.”

And that’s just what Vaitekunas was looking for. Cybersonics, a company that focuses on the design and development of ultrasonic products for the medical industry, experienced such exponential workforce growth from 2009 to 2014 that it was in desperate need of a larger facility. That’s when Vaitekunas peered across the street.

For Vaitekunas, the opportunity to move Cybersonics into newer, larger office space that close to campus was a no-brainer. “The minute I toured the facility I was impressed,” he said. “We had already collaborated with Penn State on several projects by then, and that really just cemented our decision to move to Knowledge Park. We’re so pleased to be here.”

One of those collaborations was a lithotripter, a high-powered therapeutic ultrasonic device that removes large kidney stones. Using ultrasonic energy, the device breaks up kidney stones and painlessly extracts them from the body. Cybersonics was looking for a specialist to support the project, and Penn State was there to help.
Built in 1998, Knowledge Park is located close to campus to make it easy for companies to collaborate with the University.

To foster even more relationships, Penn State Behrend is also working with the Greater Erie Industrial Development Corporation (an affiliate of DevelopErie), which identifies companies that would like to move to the Erie County region for economic development and are also interested in the same technology initiatives as the Knowledge Park promotes.

“Partnering with DevelopErie has been amazing,” said Ford. “We've been able to bring in companies that benefit not just the University, but Erie County as well. It’s a win-win all around.”
Cybersonics is only one of many companies to relocate to Knowledge Park. Since the facility opened, such companies as SKF Aerospace NA, CMI Energy, Indeck Keystone Energy, and General Electric Transportation, a unit of technology giant GE, have taken up residence in the park’s five buildings.

So five buildings aren’t enough anymore. With office space at almost 100 percent capacity, a sixth Knowledge Park building is on the way. The Advanced Manufacturing and Innovation Center, a two-story, 60,000 square foot-building planned for completion in fall 2015, advances Penn State Behrend’s open lab environment initiative, a key component of the park’s mission.

Amy Bridger, director of research and business development for Penn State Behrend, says the open lab environment helps enrich student, faculty, and staff experiences at Knowledge Park by making the University’s intellectual resources available to external companies.

“Open lab is an environment we cultivate to open up our resources—both people and laboratories—so students, faculty, and staff can engage with industry for research and business development collaboratively,” said Bridger.

In the past year, Penn State Behrend expanded Knowledge Park’s open lab concept to other higher education institutions in the region and continued to grow the idea throughout Penn State.

“This open lab concept is eye-opening for people,” said Bridger. “We’re willing to work with them to take an idea from concept to prototype and bring it close to production.”

And at a time when economic growth is a constant concern, collaborations among Penn State and forward-thinking companies foster the opportunity to increase economic activity in the region.

“Knowledge Park helps companies in the region stay competitive because they are able to leverage a major research university in both applied and fundamental research,” said Bridger. “We’re able to bring economic activity into the region that wouldn’t be here if Penn State wasn’t here.”
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<th>Stats &gt;</th>
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<td><strong>18</strong>&lt;br&gt;Campus IT retreats&lt;br&gt;Retreats at Penn State Greater Allegheny, Lehigh Valley, Mont Alto, and University Park, brought together IT staff members from eighteen Penn State campus locations to build new relationships and find new ways to collaborate. Sponsored by the Office of the Vice President for Commonwealth Campuses, the events focused on such topics as team building and the Penn State Service Management Program.</td>
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<td><strong>$550,000</strong>&lt;br&gt;Web Conference at Penn State&lt;br&gt;The 2015 Web Conference at Penn State brought together approximately 460 professionals working in the fields of coding, content strategy, user experience, accessibility, instructional design, and more to learn about fostering high-quality interactive experiences. Professionals from Penn State, fifty-five other higher education institutions, and seventy-five businesses attended the three-day professional development event. The University saved nearly $550,000 in conference fees and travel expenses by sending staff to the Web Conference instead of comparable external events.</td>
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<td><strong>19,909</strong>&lt;br&gt;University Collaboration Suite&lt;br&gt;University Collaboration Suite (UCS), an email and calendar system, delivered an average of 1.5 million emails each day to 19,909 faculty and staff members. Individuals, teams, and units across the University were able to share files and calendars in UCS, making it easier to coordinate schedules and collaborate.</td>
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<td>The fifth annual MacAdmins Conference featured seventy speakers and brought together nearly 400 attendees from seven countries. Participants represented areas ranging from higher education, K-12, business, IT, government, and consulting industries. The event provided in-depth training in the deployment and management of Apple desktop computers and mobile devices in enterprise environments.</td>
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<th>77,730</th>
<th>Call Center</th>
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<td>Staff at the Penn State Call Center answered about 77,730 calls, providing general University information, directory assistance, audio and video conferencing, language translation, international dialing, and more. The Call Center also provided 7,168 Meet-Me audio bridge conference calls (an increase of 7 percent from the previous year).</td>
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<tr>
<th>83,446</th>
<th>Wikispaces</th>
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<td>Nearly 30,000 faculty and staff accessed 4,259 individual Wikispaces and made more than 83,446 edits throughout the fiscal year. Users collaborated with individuals from more than 170 institutions, of which 121 were from higher education. Wikispaces is used by the University community for collaboration and information sharing.</td>
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More than one hundred banks in thirty countries joined the ranks of Anthem Blue Cross Blue Shield and Sony Pictures this year. As targets of unprecedented, and likely some of the most costly, cyber attacks in history, the financial institutions, insurance company, and film studio are recovering after record-setting amounts of data, money, internal emails, and more were stolen by hacker groups, which in some instances are believed to have been sanctioned by nation-states. In 2014, thieves behind the Target and Home Depot breaches made off with customer credit card numbers and cost the corporations millions of dollars.
But most data breaches don’t make headline news, and sometimes companies don’t know they’ve been hacked until it’s too late. In 2014 alone, there were more than 740 breaches in the financial, business, health care, education, and government sectors, according to the Identity Theft Resource Center. That figure is expected to climb throughout 2015.

Penn State’s own intrusion detection and prevention system operated by Security Operations and Services, the University’s cyber security team, identifies and blocks approximately 157,000 hostile systems from accessing 200,000 computers on the University network on any given day. And within the next year, areas across Penn State will participate in a security assessment to gather data to use as a benchmark for future planning. For a vast institution like Penn State, what one area does in the realm of its own network security processes can have profound implications on the rest of the University.

“This is the world we live in now,” said Matthew Snyder, chief information security officer for the Penn State Milton S. Hershey Medical Center. “If you would have told me a couple of years ago that a data breach could cost $1 billion, I would have thought you were crazy. Now, it’s not too far-fetched—these guys don’t play by the rules.”

Laws and regulations that the majority of the world adheres to mean very little to a growing faction of cyber criminals, commonly referred to as advanced persistent threat (APT) actors. Since emerging in the early 2000s, APT actors use sophisticated tools and tactics to gain access to and steal digital information they can use or sell at a later date. With economic and political motivations, these groups are characterized by their ability to patiently infiltrate computer networks and remain undetected for up to two years on average before being caught or revealing themselves—by then, the data breach has already happened.
The world is dealing with a level of sophistication among APT actors that over time has also become highly coordinated, according to Kevin Morooney, vice provost for Information Technology at Penn State.

There’s a spectrum of hundreds of known APT actors that are going after everything from intellectual property and health data to credit card and social security numbers—a far cry from the earliest days of the Internet when hacking was almost like a kind of playful vandalism. Eventually, hacking became more sophisticated and economically focused, but was still primarily unorganized.

“Today, these threat organizations are well-funded and run like large companies with business plans, many employees and headquarters,” Morooney said. “That kind of threat flies in the face of how universities have generally chosen to design their network architectures and accompanying services: open, fast, and available.”

Institutions of higher education rely on sharing knowledge and information to promote collaboration and educational achievement. But, they also have an imperative to protect the troves of intellectual property and personally identifiable information in their care.

Safeguarding this data has always been a serious job, but it’s getting even more complicated since the majority of breaches are the result of malicious or criminal activity (and not employee error or system glitches), according to a 2014 Cost of Data Breach Study by the Ponemon Institute.

“It’s not just an IT, Penn State or United States issue — it’s a global shift.”

“If a state-sponsored or criminal APT actor wants something, they’ll come after it—they don’t care if someone has dedicated his or her entire career to a research project. They’ll steal it in minutes,” Snyder said. “There’s very little that can be done to prevent a cyber attack, making incident response a critical component of an organization’s cyber security strategy.”
For the health care and higher education industries, finding a way to remain open to the world, yet secure, is an opportunity to change the operating paradigm, according to Snyder. The cyber security model is shifting from an entirely prevention-driven approach to one that blends prevention with incident detection.

“Going forward, organizations will assume they’re going to be hacked and begin to formulate incident response processes and decisions based on that presumption,” Morooney said.

Since the cost of being breached is expected to grow in 2015, that's a wise strategy. While health records can be sold for $316 each on the black market, education records are not far behind at $259 per record, according to the Ponemon Institute.

“As citizens, we’re going to see huge changes in how we engage the Internet. It’s not just an IT, Penn State, or United States issue—it’s a global shift,” Morooney said. “Developing a healthy level of skepticism at the individual level for what we click and where we go online—even places we think are safe—is a step we can all begin to take.”

Amid a bevy of unknown threats, Snyder finds a way to stay positive. “With cyber security being so dynamic, it’s almost impossible to make it black and white,” he said. “It’s gray. You can be creative, innovative, and come up with solutions that other people might not have thought of before. So, what’s going to happen in the next year? A whole lot.”
Penn State Person Biographical Record
To help provide consistent and accurate person identity information for individuals throughout the University, IdS, in collaboration with the Enterprise Project Management Office, established a Penn State Person Biographical (Bio) Record. Providing consistent identity information will help the University safeguard digital identities and ensure students, faculty, and staff can gain access to the resources they need. The tool will be housed within the Central Person Registry.

Security enhancements
More than 600 University systems susceptible to a worldwide security bug called POODLE SSL were patched and upgraded to help make the critical systems more resistant to attack and protect such information as the addresses, dates of birth, and Access Accounts of students, faculty, and staff.

Central Person Registry
PSUAlert (Penn State’s emergency notification system), LionPATH (the initiative to replace Penn State’s existing student information system), CCure (the University Police door-access system), and the International Travel Registry were added to the services and systems using the Central Person Registry—which integrates identity information from disparate University sources into a single system. The registry improves processes for creating, tracking, and managing the identity records of students, faculty, and staff.

Campuses collaborate on security
Penn State Wilkes-Barre and Penn State Worthington Scranton hosted a joint session to discuss best practices in information security and networking operations. The collaboration will help both campuses maximize their efficiency in critical areas and better support students, faculty, and staff through cross-training.

New Penn State Data Centers
Construction continued on two new data centers that will be located at University Park and the Penn State Hershey Medical Center. The new facilities will consolidate physical resources, boost energy efficiency, and protect valuable digital assets by providing a more redundant and resilient environment for conducting teaching, research, and business at Penn State.

Penn State Mont Alto Data Center
The Mont Alto Data Center was relocated to a different building on campus to improve security and disaster recovery. The relocation moved the data center from a flood-prone basement to a newer building with electricity backed up by a generator.

Stats>

14,863
Two-factor authentication

110
Vulnerability scanning

46,758
Penn State Access Accounts

Enrollment in Penn State’s two-factor authentication (2FA) service—which offers an extra layer of protection to University accounts, data, and services—continued to grow this fiscal year. With the addition of students, faculty, and staff from the College of Engineering, Penn State Milton S. Hershey Medical Center, Information Technology Services, the Office of Undergraduate Admissions, and Penn State Outreach and Online Education, more than 11,832 community members and 14,863 devices were enrolled in the service.

Participation in Penn State’s self-scanning service, which enables authorized users to access a centrally managed vulnerability scanner to proactively identify at-risk systems, increased by 110 percent during the fiscal year. This University-wide service helps units identify software and operating system vulnerabilities, which can be exploited by cyber criminals and put Penn State’s academic, administrative, and research data at risk.

Access Accounts are digital identities students, faculty, staff, and designated affiliates of the University use to access protected online resources and services. There were 46,758 Access Accounts granted during the fiscal year.
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<th><strong>600,000</strong></th>
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<tbody>
<tr>
<td><strong>eCommerce</strong></td>
<td><strong>Windows Server 2003 remediation</strong></td>
<td><strong>Spam Email</strong></td>
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The University’s eCommerce system provided more than 127 merchants with a reliable, secure, and cost-effective payment system for processing approximately 600,000 electronic transactions totaling more than $148 million through such services as ePay, PSU Pay, PSU Checkout, and eStore Hosting. A security update to the eCommerce system ensured Penn State credit card transactions remain industry compliant.

An initiative to identify and mitigate Windows Server 2003 operating systems on Penn State’s network prior to their end-of-life support helped boost IT security across the University. Security Operations and Services worked with forty-nine units to identify, track progress, and mitigate more than 500 of these operating systems, which when left unpatched and unsupported can put University data and systems at risk.

To protect the Penn State community from unwanted and potentially dangerous email, 127 million spam messages sent by malicious servers were blocked from the inboxes of students, faculty, and staff who use WebMail and IMAP. In contrast, an average of four million legitimate emails were allowed to pass through the system each day. A spam filter also helped protect the University community from malicious messages and phishing scams and intercepted twenty-two million hostile cyber attacks.

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<tr>
<th><strong>270,000</strong></th>
<th><strong>20</strong></th>
<th><strong>29,690</strong></th>
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<tr>
<td><strong>WebAccess</strong></td>
<td><strong>Full disk encryption</strong></td>
<td><strong>Background checks</strong></td>
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WebAccess, a single sign-on authentication system, enabled Penn State community members to securely authenticate and sign on to more than 2,300 websites. On average, there were 270,000 logins per day from 92,000 different Penn State Access Accounts to 450 different websites daily.

Usage of the University’s full disk encryption service nearly doubled during the fiscal year, while participating units increased by 20 percent. Full disk encryption is an information security best practice that protects data from unauthorized access in the event a device is lost or stolen.

In compliance with University policies and to create a safe campus environment for students, faculty, staff, and visitors, Penn State processed more than 29,690 background checks on employees, volunteers, contractors, and adjunct faculty.
Dean Patches’ to-do list has no end.

A dairy farmer in Lebanon, Pennsylvania, Patches sees the sunrise every morning by the time he’s milked and fed his more than ninety cows and checked on the chickens. He spends the rest of the morning and afternoon working alongside his wife and three sons before watching the sun disappear during the day’s second milking—a cycle that will start anew the following dawn.
Since agriculture is a major source of such pollutants as phosphorous, nitrogen, sediment, fertilizers, and pesticides entering waterways, farmers can play a critical role in minimizing soil loss and protecting water quality.

“The importance of the online system is two-fold,” Day said. “One goal is to support the environment through initiatives like the federal Clean Streams Act and Pennsylvania’s Clean Streams Law, and the other is to make it easier and less expensive for farmers to meet these complex regulations.”
The secure system enables farmers to generate the high-quality farm and field maps they are required to submit to state regulators as components of nutrient balance sheets, nutrient management plans, and soil erosion and sedimentation plans.

Before the advent of PAOneStop, farmers could hand draw these maps or hire a consultant, which could cost hundreds of dollars per map—adding up to millions of dollars for the state’s roughly 56,000 farmers, according to Day.

“To do the mapping themselves, they would have to find aerial photographs of their farms, calculate field acreage, and identify water sources and the types of soil in each field, which isn’t easy,” he said. “It was becoming too time consuming to do manually.”

Since PAOneStop accesses and automatically imports aerial photography, topographic images, and soil information from state and federal databases into the maps, it makes it easier for farmers to create and update their maps each season. The interface also calculates acreage and enables farmers to outline field boundaries and animal-use areas as well as mark streams, ponds, wells, sinkholes, and more.

When Patches first started to use PAOneStop to create manure transportation plans (for each time he needed to move manure across his own farm or to a neighbor’s), he had a lot to learn about digital mapping.

During this time, Patches’ daughter was completing a soil science degree in the Penn State College of Agricultural Sciences and was learning about geographic information systems (GIS). Kelly Patches, now a Penn State alumna and Extension educator, helped her dad learn how to use the interface when she was home from school on holiday breaks.
“When I was in school, computers were something that were mentioned—we didn’t use them,” Patches said. “But my daughter was able to sit with me at the computer and show me all the ways to draw streams and buffers, for example, and now I can pretty much do it all myself or figure it out.”

For farmers who aren’t tech-savvy or who don’t have GIS experts in the family, there’s Bob Neiderer. As the technical support specialist for PAOneStop, Neiderer is the guy to call when you need help drawing a field or pond or just to talk through an issue.

“We’re constantly making improvements and changes to PAOneStop based on feedback from the people who actually use the system,” Neiderer said. “Farmers have a special set of needs and we want to keep expanding the system so it’s truly a ‘one stop’ resource for them.”

For Patches, saving any amount of time helps when there never seems to be enough hours in the day. “We’re like any other family dairy farm: the day’s as full as you can make it,” Patches said. “PAOneStop is nice because it gives me a complete set of maps and saves me the effort of having to use another computer program or flip back and forth among multiple sets of data—it’s been a real help.”

Beginning in the spring, Patches started to use the system’s newest module to save even more time on paperwork.
In addition to creating the maps needed for soil erosion and sedimentation plans, farmers like Patches can now complete the erosion plans themselves in PAOneStop. Because the Environmental Protection Agency and the Department of Environmental Protection expect farmers to keep soil erosion below a certain level, this feature will automatically calculate how many tons of soil per acre, per year are being eroded in each field.

Calculating soil loss by hand isn't easy (and requires topographic and historic climate data), so by answering a few questions in the system about such conservation practices as row grades and water terraces, farmers can learn if their fields are in compliance. If they're not, the system makes it easy for farmers to adjust their crop rotations, vegetative buffer zones, and more to reduce soil loss and protect water.

Though only Pennsylvania farmland can be mapped in PAOneStop, Day would eventually like farmers across the country to be able to use the system. Since the backbone is already built, he says adding state-specific map data and soil information wouldn't be too complicated.

But for now, Neiderer and Day are happy they're having a positive impact.

“The nice thing is that people are using the software. For a long time, we've done a lot of research and extension projects, which are valuable, but people aren't necessarily able to use that information on a daily basis,” Day said. “With PAOneStop, farmers are using it and they like it. I feel really good about that.”

### Soundbites >

#### University tuition and cost calculators

Two new University tuition calculators launched to help prospective and current Penn State students and their families plan for future education costs. The calculators—a Tuition and College Cost Estimator and a Net Price Calculator—will provide quick access to tuition rates, fees, and other costs associated with attending the University for on-campus and online students.

#### Penn State Service Management Portal

The IT Transformation Program (ITX) and the Service Management Program released the first iteration of a self-service interface (service.psu.edu) to help support students, faculty, and staff. Community members can use the portal to submit help requests, explore IT services, check the status of questions and more. The portal will help present IT services in a unified way and will continue to grow as more units join the Service Management Program.

#### Project WorkLion

Project WorkLion, a multi-year initiative to replace Penn State's existing human resources (HR) and payroll systems with a cloud-based human capital management solution called Workday, began during the fiscal year. Workday is set to go live in early 2017 and will be integral to the work of thousands of Penn State faculty, staff, and student employees. The initiative, along with the overall HR transformation, will enable the University to more readily adapt to emerging technologies and better serve the Penn State community.

#### Big Data Lab at Penn State Great Valley

A new Big Data Lab—a computer cluster with the potential to handle large amounts of data—at Penn State Great Valley will be a testbed for creating user applications for new degree programs being developed on campus. Students will also have access to the lab to get hands-on experience with setting up and using the system.
**The Learning Resource Network**

As part of Project WorkLion—an initiative to replace Penn State's existing HR and payroll systems—the University has partnered with Cornerstone OnDemand to implement a learning management system for faculty and staff at Penn State. The Learning Resource Network will provide faculty and staff with a single location where they can find professional development offerings and related resources.

**Software at Penn State**

Software at Penn State, an online-only software store that provides the University community with access to software licenses at reduced prices, administered twenty-six contracts that saved students, faculty, staff, and departments $20 million during the fiscal year.

**Project LionPATH**

Work continued to transfer millions of data records into a new database platform to support Project LionPATH, a multi-year initiative to replace Penn State’s existing student information system (ISIS). The new platform gives developers immediate access to data so they don’t have to wait for nights and weekends like with ISIS. Scheduled to be completed in 2017, Project LionPATH will provide a more user-friendly, state-of-the-art student information system.

**Electronic account activation**

Electronic account activation, a process that enables Penn Staters to activate their Access Accounts online, continued to expand. Nearly 23,000 activation emails were sent to incoming 2015 summer and fall semester students, eliminating the need for students to visit signature stations on campus. Penn State World Campus and Dickinson School of Law students and Penn State Hershey Medical Center employees also use the process.

**Enterprise log management service**

Splunk Enterprise, a log management service, was made available to Penn State units for collecting and analyzing machine-generated data, which can help offices make business decisions and reduce costs. The service will provide an affordable data mining, data collection, and analytics tool to the Penn State IT community and enable smaller units previously unable to afford the software to benefit from the reduced enterprise agreement pricing.

**ITS Strategic Plan 2015–19**

The culmination of efforts by a twenty-four-member planning team, the five-year ITS Strategic Plan includes input and information solicited from the Information Technology Leadership Council, ITS staff members, and the Penn State community. The plan, which was submitted to the University during the fiscal year, draws on broader IT planning efforts and builds on connections that support Penn State’s overall IT planning direction. The plan is available at http://sites.psu.edu/itsstrategicplanning/wp-content/uploads/sites/12285/2014/07/its_strategic_plan_june14.pdf

**IT Service Desk**

The IT Service Desk responded to approximately 232,265 requests during the fiscal year. In addition to providing walk-in support, the IT Service Desk offered support via email and phone for many IT services and general technology questions twenty-four hours a day, seven days per week (excluding University holidays). As part of a larger response team consisting of volunteers from across ITS and Penn State IT, the IT Service Desk successfully responded to more than 1,000 telephone calls and helped 7,535 community members who were affected by a cyber attack on the College of Engineering.

**Stats**

- **ServiceNow**: 5
- **Cloud engagement**: 16
- **IT Service Desk**: 232,265

After extensive evaluation by more than one hundred staff members, Penn State signed a three-year contract with the software company ServiceNow to support the University’s IT Service Management Program. The program's mission is to create shared policies and processes to improve customer service across Penn State's IT units. During the fiscal year, five IT units transitioned to the ServiceNow software. In 2016, all IT units across the University will be able to subscribe to the program.

Work continued on exploring several cloud service offerings that could deliver unprecedented economies of scale, resiliency, flexibility, and agility to the University’s web infrastructure. A team of sixteen IT professionals from Information Technology Services (ITS), Finance and Business, the College of Information Sciences and Technology, and the Office of the President are exploring the disaster recovery, business continuity, and workload capabilities of Microsoft Azure and Amazon Web Services.
<table>
<thead>
<tr>
<th><strong>YOU@PSU</strong></th>
<th><strong>$1.5 M</strong></th>
<th><strong>40,000</strong></th>
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<tbody>
<tr>
<td><strong>Virtual Machine (VM) Hosting</strong></td>
<td><strong>Box at Penn State</strong></td>
<td></td>
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<td>As the replacement for the Staff Review and Development Plan, Penn State's new performance management system, <strong>YOU@PSU</strong>, is designed to promote a fair, consistent, and future-focused approach to performance management and reviews at Penn State. During the fiscal year, 8,600 staff members received performance reviews from 2,500 supervisors.</td>
<td>Penn State's VM Hosting—a service that consolidates physical servers into virtual ones—experienced a 64 percent increase in the number of virtual servers hosted over physical servers, saving the University approximately $1.5 million. To make it easier for faculty and staff to access customizable hosting to support their teaching, research, and business needs, the service also launched a new self-service portal for creating, managing, and re-booting virtual machines. After a successful pilot, Penn State Beaver also began using the service to reduce its on-campus servers in favor of virtual ones at University Park.</td>
<td>Adoption of Box—a cloud-based file storage tool that enables users to access, manage, and share their data—increased by 206 percent. By the end of the fiscal year, more than 40,000 students, faculty, staff, retirees, and other collaborators stored fifty-two terabytes of data.</td>
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<tr>
<th><strong>80,000</strong></th>
<th><strong>$834,000</strong></th>
<th><strong>9,200</strong></th>
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<tr>
<td><strong>Cooperative Lab Management</strong></td>
<td><strong>Vendor training</strong></td>
<td><strong>Permit Direct</strong></td>
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<td>Penn State's Cooperative Lab Management (CLM) is a central IT service that helps more than forty IT departments manage 9,800 computers across the University. In fall 2014, 80,000 students, faculty, and staff logged onto campus computers three million times and printed 5.8 million pages. During the fiscal year, Penn State New Kensington moved its campus computer labs to the CLM service, which helped reduce its printing costs by 41 percent compared to the previous year.</td>
<td>Penn State's vendor training service provides IT professionals with access to vendor-offered training sessions at reduced rates. During the fiscal year, 336 staff members from across the University participated in twenty-three sessions to become more effective at using technologies to deliver IT services to students, faculty, and staff. By negotiating lower rates and offering training at various Penn State locations to reduce travel and staffing time, the service saved the University approximately $834,000 since its inception in 2008.</td>
<td>Permit Direct, a new system for distributing student parking permits, was introduced during the fiscal year. By mailing parking permits directly to students' local addresses, the service helps improve customer service through automation and increases office efficiency during student arrival times. About 9,200 student parking permit orders were completed via Permit Direct.</td>
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<th><strong>$22,000</strong></th>
<th><strong>33,000</strong></th>
<th><strong>45,000</strong></th>
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<tr>
<td><strong>Infrastructure consolidation</strong></td>
<td><strong>Systems Management</strong></td>
<td><strong>Penn State Wireless expansion</strong></td>
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<td>By leveraging networking services provided by Telecommunications and Networking Services (TNS) and the Penn State Data Centers, four disparate IT networking infrastructures were consolidated into one. This consolidation will reduce administrative overhead and maintenance costs as well as save Penn State approximately $22,000 per year due to the reduction in electrical load.</td>
<td>Systems Management at Penn State helps 360 staff members in fifty colleges, administrative units, and campuses manage 33,000 computers. The service allows administrators to efficiently update systems, keep computers secure, and provide better IT support for students, faculty, and staff while reducing the University's carbon footprint by roughly fifteen million pounds per year.</td>
<td>ITS-operated wireless was installed at The Penn Stater Conference Center Hotel to provide improved performance and reliability for visitors who attend events or stay at the Penn Stater. In total, TNS operates 8,000 wireless access points at twenty-one campus locations, which helps to support approximately 45,000 simultaneous users who access wireless each day.</td>
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A new contract with Penn State’s external cable TV provider, which provides cable television to residence halls and academic and administrative units at University Park, has resulted in a 36 percent reduction in the monthly subscription rate from $15 per month to $9.60.

Developed by the Office of Human Resources and the Office of the Vice Provost for Academic Affairs, Penn State’s new Promotion and Tenure Viewing System enables University colleges and campuses to process and review candidate dossiers via an online viewing system, replacing the former paper process. During the fiscal year, one hundred candidate dossiers (consisting of 1,326 documents) were uploaded through the new system.

Business continuity and disaster recovery efforts for the Penn State Milton S. Hershey Medical Center moved to a newly renovated space at the Colocation Center in the Computer Building on University Park campus. The move will save approximately $250,000 per year on rental and networking costs.

To ensure high quality services are being provided to the Penn State community, Outreach IT measured student and faculty satisfaction through two customer satisfaction index surveys. Student and faculty respondents from World Campus rated their satisfaction on 12,917 incident and service requests, with 96 percent of respondents saying they were satisfied or very satisfied with their experiences.

Throughout the fiscal year, 92 percent of incidents reported to Outreach IT were assigned on time and 98 percent were resolved on time. As outlined by the Penn State Service Management Program, the goal of incident management is to resolve incidents as quickly as possible while minimizing impact to the University.
The reactions were intense. Some of the participants cried, some got angry, and some stood in shocked silence. The television screens loomed in front of them, displaying images of their distorted and unrecognizable faces. “That’s not me,” a number of them whispered.
But it was them. The six participants were staring at themselves, digitally aged by up to thirty years. The projection was part of the first showing of “Face.Age: A Multimedia Template for Cross-Generational Interactions,” an art installation in North Carolina established by Andrew Belser, a Penn State faculty member who uses technology to bring the young together with the old.

It’s the reactions of those first participants in 2011 that still amazes Belser, professor of movement, voice, and acting in the Penn State School of Theatre and director of the Arts and Design Research Incubator in the College of Arts and Architecture. Belser is one of the creators of the Face.Age installation, an idea conceived with a former colleague while he worked at the University of North Carolina Wilmington.

“I originally got the idea for Face.Age from a technology lab that collects data sets of aging faces,” said Belser. “Computer algorithms take thousands of pieces of data from faces of men and women of varying ages and ethnicities, and the lab assists law enforcement agencies by using this data to construct what persons of interest look like, even if they're fifty years older.”

Belser was fascinated with the imagery. Already yearning to produce something focused on crossing multiple generations, the technology of face aging helped cement the conceptualization of Face.Age.

“I started doing a lot of research around aging, and I found one of the main themes surrounding the idea of getting older is a huge disconnect older people feel from younger generations and the community overall,” said Belser. “I wanted to do something that really challenges people to bridge this disconnect.”
And Face.Age definitely takes on this challenge. The crux of the original installation in North Carolina is video footage of conversations between younger participants (eighteen to twenty years old) and older participants (seventy to ninety years old) studying, describing, and touching one another’s faces and exploring their perceptions of their own faces at different times throughout their lives. Younger participants are shown imagery of their faces digitally aged in ten-year increments, and they explore their reactions to these images with the older participants.

“In my research I found that younger generations don’t typically spend meaningful time with older people anymore,” said Belser. “They don’t have reference points of what it will be like for them as they age, so when they think of themselves at sixty or seventy it’s like thinking about a complete stranger. Seeing themselves as older was really eye-opening.”

Belser is hoping the second showing of the Face.Age installation—planned for 2017 in various still undetermined locations—will be eye-opening for audiences, too. Updated interview footage will be projected onto three, slightly curved panels placed in a semicircle in the center of a large room. These panels will encircle the audience, almost fully immersing them in the conversations between participants.

“Ideally, people from all generations will come to Face.Age and feel compelled to have these same types of conversations with each other,” said Belser. “It’s a place we can hopefully start to change the culture of thinking of aging as a bad thing.”

And Belser hopes to extend the cultural impact of Face.Age beyond his own backyard. While speaking about the installation at the Gerontological Society of America’s Annual Scientific Meeting in 2012, he was approached by researchers from Japan, Korea, and China interested in taking Face.Age internationally.

“A lot of these countries are experiencing a culture shift similar to what we have in the United States in regard to the relationships among generations,” explained Belser. “In China, for example, a lot of young people are leaving their nuclear families for work and are losing contact that’s always been a strong part of their culture. I have a feeling some of the first installation sites for this Face.Age are going to be international.”

While the second showing of the Face.Age installation is still in the planning phase, it’s possible a different version could be showing up on television screens before then. A television producer who has worked with PBS, HBO, and the Discovery Channel is working with Belser and his North Carolina-based collaborators on converting the installation into a feature-length documentary.
But Belser says translating the immersive power of Face.Age to a one-dimensional platform is challenging. “This technology immersion of the in-person Face.Age allows people to feel more connected to the conversation happening in front of them,” he explained. “That connection is lost when you’re watching something on television, so we’re looking at different filming and editing techniques to help bring it back.”

And connections are the core of what Face.Age is all about. While Belser plans to continue concentrating on cross-generational conversations in the next showing of the installation, he recognizes the possibilities for other connections.

“There’s a rich field for future explorations,” he said. “We could bring together people across lines of race, gender, and class in addition to generations. Face.Age could really reframe the way a diverse community comes together.”
IT Connects programs and events provided IT staff with networking, information, and professional development opportunities to fulfill their personal and career goals. With a focus on leadership, mentoring, recognition, and skill building, IT Connects supported the IT workforce at Penn State through six programs: IT Matters, IT Recognizes, IT Shares, IT Mentors, IT Coaches, and IT Learns. Learn more at it.psu.edu/connects.

As part of the IT Connects initiative, forty-seven individuals from Penn State Outreach and Online Education, University Libraries, and Information Technology Services (ITS) were acknowledged for their efforts in IT collaboration, innovation, and resource responsibility.

To improve technology support for disabled students, faculty, and staff and to meet accessibility standards, the Penn State IT Accessibility Team responded to more than one hundred requests for accessibility testing and consulting throughout the fiscal year. ServiceNow, Canvas, Box, Skillport, and YOU@PSU were just some of the services and systems tested.

As part of the University's diversity and inclusion initiatives, more than twenty IT staff members served or volunteered across the President's three equity commissions: the Commission for Women; the Commission on Lesbian, Gay, Bisexual, and Transgender Equity; and the Commission on Racial and Ethnic Diversity.

Penn State's jobs site (psu.jobs)—where all Penn State jobs are posted—was revamped to be more user friendly and help recruit talented faculty and staff to the University workforce. In 2014, approximately 4,033 vacancies were posted on the site.

IT Matters is a breakfast speaker series designed to bring topic experts and IT staff together to share ideas, food, and information. Kevin Morooney, vice provost for IT, presented two programs to approximately 500 Penn State IT staff. Four speakers, including Penn State Provost Nicholas Jones, joined Morooney to discuss leadership in today's changing landscape, security, big data, and more.

Approximately 660 IT staff from eighteen campuses gathered at University Park campus for the annual IT Picnic. While connecting with co-workers and building new relationships, attendees enjoyed games, food, and the live music of the University's IT Band. As part of the event's sustainability focus, attendees also had the opportunity to participate in tours of The Arboretum at Penn State and the University's MorningStar Solar Home.
Until June 2015, Judy Tice had worked with some of her Penn State colleagues for twenty-five years before ever seeing their faces.
As a technical administrative specialist with Telecommunications and Networking Services (TNS), she assists University employees with a variety of technical issues. Through emails and phone calls, she has gotten to know many names and voices over the years, but she sometimes doesn’t get to meet the people she helps.

That all changed when she finally came face-to-face with many of her coworkers at the TechPros Conference, which took place June 4 and 5 at Penn State York. Approximately 170 IT staff members, including several members of the Information Technology Leadership Council (ITLC), attended the conference from fifteen Penn State campuses.

An annual event held at a different Penn State campus each year, the conference covers subjects ranging from how to automate data collection to exploring the value of trust and communication in an organization.

“The goal of the conference is that everyone goes back to their home campus with some kind of nugget to share or information that will make their jobs easier,” said Kari Williamson, director of IT Operations and TechPros Conference steering committee member. “We also want people to get out and make connections with IT staff at other campuses.”

“One of the great things about TechPros is that everyone there is part of the Penn State family.”

The conference, which first took place in 2010, was originally designed for and by the campuses as a way to connect and share knowledge. Williamson said it started out as a very technical conference but has recently branched out to include sessions on soft skills, such as Tim Shortall’s presentation on trust.
Shortall, director of Transmission Facilities and Operations in TNS, has been to two TechPros conferences, one for each year he’s worked at Penn State. He says he was told by colleagues that TechPros was the place to go to meet people from other campuses. “I had such a great experience the first year I went, that I decided to go again and present,” Shortall said. “I really enjoyed reconnecting and catching up with people I met at last year’s conference.”

Although the conference is growing in popularity, it is only open to Penn State employees.

“One of the great things about TechPros is that everyone there is part of the Penn State family,” said Loren Brewster, director of information technology at Penn State York. “Everyone has either had the same problem as you or will in the future.”

Brewster, who is a conference steering committee member, says it’s also much easier to contact people in the future if you can place a face to a name.

“It’s nice to meet people in a non-work environment,” said Brewster. “Sometimes you feel more comfortable reaching out to someone if you’ve already met them and you’ve already had that connection. It helps build that support system.”
Planning and Strategic Initiatives

Information technology is one of Penn State’s most important assets, helping to support the teaching, research, and service mission of the University. In support of a myriad of organizational and strategic needs, three groups—the Service Management Program and IT Transformation Program (ITX) teams, ITSCollab, and the Information Technology Leadership Council—continued efforts to redefine how Penn State IT works together, supports community needs, and delivers IT services.

In addition to forging connections with colleagues from other campuses, the conference is a great place to get professional development—both on stage and in the audience.

“The conference is free, so it’s a low-cost way to get professional development. There’s almost always going to be at least a couple of presentations that will appeal to participants,” said Williamson. “There’s also the opportunity to be a presenter. And because everyone’s from Penn State, it’s a safe space to practice presentation skills.”

Shortall said that while he was nervous to give his presentation, his jitters quickly diminished when he saw how eager the audience was to ask him questions and participate.

“It wasn’t like I was talking to a bunch of blank faces. People were asking questions and engaging,” said Shortall. “Everyone at the conference wants to learn.”

Brewster said that while the 2015 conference was a success, the committee is always looking for ways to make each year’s event even better.

“We’d really like some new people to get involved to get some new perspectives,” Williamson said. “It’s always good to get new voices and points of view.”

For more information about the TechPros Conference, visit http://techpros.psu.edu.
SERVICE MANAGEMENT AT PENN STATE

Penn State’s Service Management Program continued to evaluate and redefine the ways in which Penn State IT approaches and manages customer relationships and service delivery.

Outreach Information Technology (OIT) implemented the first four program processes—incident management, change management, request fulfillment, and service catalog—and Information Technology Services (ITS) implemented the first two processes. Penn State Harrisburg and Penn State York IT staff were trained to use the ServiceNow tool to support the incident management process, bringing the total number of staff using ServiceNow to more than 700.

Members of the IT Transformation Program team and the Service Management Office continued to work with all early adopting units—OIT, ITS, Smeal College of Business, Penn State Harrisburg, and Penn State York—on the normalization of a shared service catalog to use for virtual service desk operations. More than 500 IT staff were trained in Information Technology Infrastructure Library (ITIL) awareness, including staff in Finance and Business, who are preparing for future subscription into the Service Management Program.

An online portal—which allows faculty, staff, and students to submit and manage help requests, explore available IT services, and more—was published at service.psu.edu. The portal was available during remediation efforts after the College of Engineering cyber attack, with participating Service Management Program IT staff using ServiceNow to assist in efforts to reset a large portion of affected Penn State Access Account passwords.

ITSCollab

ITSCollab, a group working to transform the organizational culture of ITS and IT, continued efforts to increase knowledge of Service Management at Penn State, support the IT Transformation (ITX) Program, improve culture and climate, and lead and embrace change within Penn State IT. ITSCollab members contributed to a variety of activities on these topics and engaged with subject matter experts to enhance understanding and increase performance. With a focus on expanding participation, ITSCollab continued its guest program, organized a special session for all former guests, elected new members to the steering committee, and updated 20 percent of its membership.
Comprised of more than eighty IT directors and managers from across Penn State, ITLC is a University-wide group that ensures IT services, goals, and processes align with Penn State's teaching, research, and service mission. This fiscal year, the council led and supported a variety of initiatives to promote collaboration, develop a talented IT workforce, and deliver IT services to students, faculty, and staff. In fiscal year 2014–15, ITLC:

• Created and enacted three new committees—an IT Operational Effectiveness Committee; New Technology, Opportunities, and Services Committee; and a Membership and Welcome Committee—to support the improvement of IT services, operations, and staff initiatives.
• Promoted the continued implementation of two-factor authentication, ITX, ServiceNow, and IT strategic planning efforts.
• Collaborated in the development of such new processes and structures as IT governance and a new research cyberinfrastructure, of which ITLC will play an ongoing role in making successful.
• Supported the development of a committee to identify a new email and calendar solution for the University (the group recommended the adoption of Microsoft Exchange).
• Created a group to review vendor cloud backup solutions that could be implemented across the University (the group recommended CrashPlan as the best solution).
• Developed a working group to examine contractual needs for the renewal of Box at Penn State and worked to gauge interest and help negotiate an enterprise license for Splunk, a data log analysis software.
• Collaborated with Identity Services to work toward the development of a new central Active Directory environment.
• Participated in a Gartner IT survey to identify and prioritize opportunities and initiatives related to IT security, transformation, and governance improvements.
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