Letter from the Vice President

I am pleased to present the Office of Information Technology Annual Report for 2014. As you browse through the pages of this report, you will become acquainted with both the variety of responsibilities that OIT has for its campus community, as well as learn about the major projects completed this year.

The 2014 academic year was a very successful one for OIT as we continued to manage the technology operations and needs of the University in an environment of explosive demand and change.

Given the growing threat of cyber security and the University’s continually increasing reliance on digital systems, we focused on information security from both a policy and operational aspect to best protect the assets of our University. In the past year, Princeton hired its first Chief Information Security Officer. We also conducted extensive evaluations of the security aspects of our most essential systems and implemented several technologies to enhance Princeton’s overall security profile.

For our students, we completed a number of important initiatives that provided better and faster wireless coverage across campus and better access to printing – including color printing and support for printing from the many types of mobile devices students are now bringing to campus. We have also worked hard to improve the course planning and registration process for students. With their input, we developed a new visual course planner and a course dashboard for quick access to the information and processes students need.

For our research community, we continue to make notable investments in high-performance computing. This year we instituted new operational procedures to improve reliability and operated our High Performance Computing Research Center (HPCRC) at nearly 90% utilization.

In support of the administrative operations of the University, along with our partners in Finance and Treasury we successfully launched the Princeton Prime project. This multi-year project engaged nearly every department, group, and expertise within OIT to help transform the administrative financial operations at Princeton.

Also during 2014, we completed a long-range planning process, which will guide our focus on new initiatives around identified critical technology areas, those being Princeton’s cyber infrastructure to support faculty research and end-to-end security to protect our data. We will also focus on initiatives that best support administrative effectiveness and offer expertise and services around data analytics, technology and process consulting, and usability and design.

Teams are already developing the business plans to move each of these areas forward and we look forward to meeting our organizational goal of becoming an ‘OIT 3.0’ technology organization – an organization that provides solutions that evolve with the University’s technology needs of today as well as those of the future.

To close, I’d like to say that, within the virtual pages of this report, you will see the remarkable achievements of the OIT staff. This report is really about them. Their commitment, care, and dedication they show every day is what makes our success possible.

Jay Dominick
Vice President for Information Technology and Chief Information Officer
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The Office of Information Technology

Academic Technology Services (ATS)
ATS supports University teaching and learning, and faculty and student use of instructional technology. ATS also builds, manages, and supports websites, applications, and related technologies that further the academic mission of the University.

Information Security Office (ISO)
The ISO addresses institutional issues of information security policy and practice, data governance, risk assessment and business continuity, as well as compliance requirements that span the University. The department also delivers information security programs for the University.

Administrative Information Services (AIS)
AIS provides implementation and support services for the University’s administrative systems.

Enterprise Infrastructure Services (EIS)
EIS manages the University’s data centers, server and storage systems, email, web and other collaboration technologies. EIS provides backup/restore, database administration services, authentication systems, and essential IT security services for the campus.

(OIT organization in FY14)
Princeton Project Office (PPO)
The PPO supports the University IT governance process and facilitates the annual campus-wide IT project selection process. The office also provides standard project management methodology, training, and assistance to project managers to help ensure project success.

Operations & Planning (OP)
O&P is responsible for overall organizational operations and planning efforts and for facilitating major initiatives that strengthen campus-wide IT services. O&P is also responsible for administrative strategic initiatives, including OIT staff relations, recognition and development.

Support Services (SS)
Support Services provides front-line information technology support to all members of the University community.

Research Computing (RC)
Research Computing provides computing, storage, and software infrastructure and programming services to support faculty, professional staff, and students in their research.
The OIT Roadmap

Planning and Insight

Long-range planning for information technology organizations is an increasingly challenging yet critical endeavor. The rapid and increasing pace of technological change shortens the horizon for accurately forecasting the information technology landscape of tomorrow. At the same time, more and more of our faculty, students, and staff depend on the technology we provide to fulfill Princeton’s teaching, learning and research mission. In this sea of change, keeping OIT’s technology services and solutions relevant and aligned with the priorities of those we serve requires well-integrated and continual planning.

With this intention, OIT completed a long-range planning process and created a roadmap to guide our priorities for the next three to five years. As part of this collaborative planning process, we engaged several hundred members of the campus community to identify the technology needs, challenges, and objectives at Princeton. We also consulted with a number of outside experts to address current and rising global technology trends.

To stay aligned with the evolving needs of the University, we are also creating an ongoing culture of planning. Our roadmap will be revisited and fine-tuned on an annual basis to stay on course with new and changing University needs. It will also inform OIT’s annual departmental planning process for new services, resource reallocations, and skills development.

The Roadmap

OIT’s roadmap includes a continued focus on providing a world-class computational core that supports research computing and boundless innovation. Our resolve to strengthen the security of Princeton’s information and infrastructure will be furthered with plans to acquire tools and staffing resources for delivering proactive protection. Venturing into newer territory, the roadmap will guide the development of centers that focus on data analytics and reporting, technology and process consulting, and usability and design. In each of these areas, OIT will deliver the premier services identified by our campus partners as key to their future successes.

Provide a World-class Computational Core for Research

OIT is implementing a strategy to invest in the Princeton Institute for Computational Science and Engineering (PICSciE) so that it becomes a resource for all disciplines on campus. OIT has plans to advance computational skills across campus through:

- Software performance expertise and technical staff who can tune scientific code to optimize hardware performance and prepare code to scale to the next level.
- Training and outreach resources that make high-performance computing more accessible to graduate and undergraduate students across disciplines.
- A cyberinfrastructure plan that results in a research network that removes limitations on faculty innovation, secures data, and facilitates seamless movement across the research computing continuum.
Secure Princeton Information End-to-End

OIT is investing in a proactive and preemptive approach to protecting the University’s digital infrastructure. In specific, OIT will:

• Focus on risk and deploy a campus-wide IT Risk Management Process.
• Establish a ‘Critical Infrastructure Group’ to protect the systems infrastructure that supports life safety, security, and essential campus operations.
• Invest in a security operations office that institutes proactive monitoring and preemptive measures to minimize attacks and any impact they may have.
• Consider security at every step—from solution design to implementation, to operations.

Build OIT 3.0: a Next Generation IT Organization

OIT is instituting a continual service improvement program to standardize the way we manage services across OIT with a focus on customer satisfaction and cost containment. To accomplish this, OIT will:

• Adopt a best-practice methodology for managing services (IT Service Management (ITSM)). ITSM is a discipline that focuses on developing repeatable processes for governing, deploying, and managing IT services. It is a transition away from managing technologies to managing user-centric services.
• Invest in tools to capture key performance metrics that inform future IT resource reallocations and investments.

Data Analytics and Reporting

Develop an expertise in leveraging data for insightful decision-making:

• Build an overall view of data and interrelationships
• Build data repositories and processes for cross-departmental collaboration
• Develop competencies in data visualization for predictive analysis
• Support analytical skills development across University administrative functions

Technology and Process Consulting

Create an internal consulting function to guide campus technology application:

• Align IT investment with University objectives
• Improve software acquisition and contract management processes and capabilities
• Guide technology-based process improvement initiatives at Princeton
• Provide IT planning expertise to campus

Usability and Design

Deliver simpler solutions that are:

• Intuitive and easy-to-use for everyone
• Focused on the user experience

Deliver faster solutions through:

• A variable work-force that adjusts in size with demand
• Fast-path software development methodologies and templated web solutions
• Creative solutions from the cloud
• Student-developed solutions

Deliver High-Value Solutions and Services

OIT is developing areas that will have the widest positive impact on campus and the largest return on academic investment. Business plans are in progress for three “centers” that will offer the greatest support to the University’s academic mission and campus operations.

Map direction and priorities
In FY14, the Office of Finance and Treasury, in close partnership with OIT, successfully launched the Princeton Prime project. For OIT, this multi-year project engaged nearly every department and group within our organization and called on nearly every area of expertise, all to help transform the administrative financial operations of Princeton.

**42 University systems integrated and tested for the new Chart of Accounts**

OIT developers updated 42 University systems to interface properly with the new Chart of Accounts (CoA). This integration work required end-to-end testing and involved creating, testing, and implementing nearly 200 interfaces between the new PeopleSoft Financials application and supporting systems, before Prime go-live.

Major systems impacted by the new CoA included Peoplesoft HCM/Campus Solutions, Labor Accounting, Stripes, Time Collection, Princeton Receivables, Departmental Charges, Interface Hub, and OnBase. OIT also modified a number of departmental systems to accommodate the new Chart of Accounts structure of Prime, such as Faculty Voting and the Faculty Computer Purchase program.

**Enhanced security and single sign-on for University applications**

With the rollout of Prime, five financial systems join the PeopleSoft HCM/CS system and take advantage of enhanced security and new single sign-on through the University’s PUaccess system.

With PUaccess in place, enhanced security profiles (which include a strong password, anti phishing image and phrase, and security questions) provide an added layer of security. The financial systems now connected to PUaccess include PeopleSoft Financials, Concur Travel and Expense, Marketplace SciQuest, Prime Portal and eShipGlobal systems.

**OIT training and support stepped up for Prime**

OIT technology trainers and Support and Operations Center (SOC) consultants partnered with staff from the Office of Finance and Treasury to develop course content for Prime training and to help bolster support resources in the Prime Support Center post launch on July 1.

Prime represents the first significant update to the University’s chart of accounts in nearly 40 years.
New high-performance database system

Prime is the first major information system on campus to use the University’s new specialized “Exadata” database platform. The new technology, from Oracle, provides enhanced security and increases the performance of our centrally managed databases.

Information Warehouse ready for Prime

To prepare the University’s Information Warehouse for the new chart structure of Prime, OIT programmers modified nearly all information data marts, which included more than 30 data marts. Each data mart was also configured to use the University’s new Extract Transform, and Load (ETL) tool.

Powerful tool enhances campus-wide data analysis

In the spring of FY13, OIT acquired a license for InfoSphere DataStage, an Extract, Transform and Load (ETL) product from IBM. This ETL tool became a key architectural component of the Prime Financials data warehouse project and has since become the standard for supporting all ETL processes in the University’s Information Warehouse.

All Prime and Prime dependent-data marts have been converted from older technologies to use the new DataStage ETL tool and the remaining data marts will leverage the reporting capabilities of DataStage by the end of FY15.

Looking beyond Prime, the new ETL tool will set the stage for more sophisticated reporting capabilities and campus-wide data analytics. Implementing DataStage as a central resource also standardizes the approach across the University for moving data from one place to another, allowing for better overall support.

All Information Warehouse staff members have been trained to use DataStage and full documentation is available.

Electronic document management improves financial processes

In FY14, OIT created a number of OnBase solutions for the Prime project including a document management system for improving the Accounts Payable invoice process. The scanning and indexing capabilities of the solution optimize invoice search and retrieval. Workflow tools facilitate and expedite the process for handling department communications.

A few enhancements in financial reporting were also realized. Links to transactional support documentation stored in OnBase were added to a number of financial reports, giving users in-report access to transactional details from a single system. A custom integration between the Information Warehouse and OnBase systems made this possible.

OIT also updated a number of departmental document management solutions developed prior to Prime to accommodate the new chart of accounts. OIT created specialized tools to facilitate and expedite the data conversions that were part of this process.
More, mobile, and color printing options for students

Based on feedback received from students, OIT implemented several upgrades to expand student print services. We added more printers, combined the OIT and Library print queues, enabled mobile printing, and introduced color.

In February, OIT implemented mobile printing to enable students to send documents from their mobile devices to OIT and Library cluster printers. Students quickly adopted the new service and in five months sent more than 19,000 print jobs from their mobile devices. OIT also configured a single print queue to simplify printing to Library and OIT printers. Using the new print queue, students can print to the queue and release their job to any OIT or Library printer they choose.

In May, OIT added a high-capacity color printer to the fleet of printers on campus. In the first two months of service, students printed more than 4,700 sheets in color.

BlackBoard and ‘Google Apps at Princeton’ work together

In FY14, OIT integrated Princeton Google Apps with the University’s Blackboard learning management system. The integration supports collaboration between instructors and students by way of their Princeton Google accounts. Instructors can create documents and sites in Google Drive, and link them to a Blackboard course to automatically share them with all students enrolled in the course. Students can also collaborate with one another on the shared materials.

Students use preferred first names at Princeton

Students now have the option to identify a preferred first name (in addition to their legal name) to be used at Princeton. A student’s ‘preferred name’ is stored in University databases and used whenever it can be and as long as a legal name is not required. Student preferred names appear in the University directory, on class rosters, and in most communications.

Paperless solution streamlines student advising

OIT worked with several University offices to develop and implement a new paperless advising system. The advising tools created in the process were first used in the fall of 2013 to facilitate the discussions between incoming students and their residential college advisers.

New electronic student folders and custom advising dashboards within the Peoplesoft Teaching and Advising system work together to streamline and enhance first-term student advising. Electronic folders also feature enhanced security protections.

Tech Clinic extends hours to better accommodate student schedules

In the spring of 2014, the OIT Solutions Center Tech Clinic started keeping its doors open longer. Now open until 6:30pm, the clinic provides more opportunity for students to get help with their computers from OIT technology consultants. The new hours also better accommodate student schedules.

Each year, 7,000 students, faculty, and staff on average visit the tech clinic for in-person help with their computers and mobile devices. In FY14, there were nearly 6,500 walk-in appointments for technology assistance and 400 requests to borrow devices from the Mobile Technology Loaner program. Undergraduate students use the services of the Tech Clinic most of all University groups.
TigerHub replaces SCORE

In FY14, the Office of the Registrar began a project to improve the overall student self-service experience. It was an effort that drew upon the creativity of the Registrar’s office, the Directors of Studies, OIT and, most importantly, a group of undergraduate and graduate students who provided the valuable insight from the client perspective.

The project resulted in two new tools for students: a redesigned student center, named TigerHub, and a Visual Course Planner to aid with the course planning, advising, and registration process.

New TigerHub

TigerHub is a dashboard of student electronic resources that was designed with input from the project team and with undergraduate and graduate student participation. It is a one-stop shopping experience where students can manage the administrative aspects of their academic experience at Princeton.

Students mock up visual course plans with tool and real-time data

Equipped with the planner and real-time course information, students can ‘pin’ course selections to a weekly calendar view and mock up one or several visual course plans. Students can also add personal events to their calendars.

Students can share their course plans with their advisors and then send them to the enrollment queue. Once in the queue, students can access and use them during course enrollment to simplify the registration process.

Princeton students eligible for free Microsoft software

In FY14, OIT negotiated an enterprise agreement with Microsoft that includes free Microsoft Student Advantage software for Princeton students. Under this program, students can download and install any of the Microsoft Office 365 ProPlus products on up to five personal devices, for free.

MS Word, Excel, PowerPoint, OneNote, Access, and Publisher products are available through this program.
AskRC social media site builds community among Princeton researchers

In May 2014, Research Computing introduced AskRC, a social media site developed to build and support the research computing community of faculty, staff, postdocs, graduate students, and undergraduate students at Princeton.


Roadmap planning envisions research computing at Princeton

Over the course of FY14, OIT engaged dozens of faculty members and held two focus group sessions with the goal to lay out the roadmap for the future of research computing support at Princeton for the next three to five years. Faculty members, departmental IT staff, and OIT staff participated in the sessions.

The resulting vision details a seamless transition for researchers to progress from using personal computers and the TIGRESS high-performance computing systems to using the national supercomputing resources to undertake the computational aspects of their research.

To realize this vision, OIT is focusing efforts on developing software performance expertise, enhancing the training and outreach program, and optimizing the University’s cyber infrastructure for high-performance data transfers.

Specialized training teaches high-performance computing skills

In FY14, the Princeton Institute for Computational Science and Engineering (PICSciE) coordinated an education and outreach program for researchers at Princeton to learn from experts about high-performance computing and programming. The program included:

- 4 colloquium and seminars on topics ranging from software challenges to Titan and preparing for exascale supercomputers
- 8 mini-courses and workshops on Python, Athena Data, MPI and OpenMP, and VisIt for scientific visualization
- 1 symposium on Data Science
- 4 computational science and engineering virtual summer classes that introduced GPGPU programming, HOOMD-blue and data study
- 3 talks on Intel processors, coprocessors, and software
- 33 training sessions on GIS computing

The site url is http://askrc.princeton.edu.
NSF grant funds cyberinfrastructure engineer for 2-year appointment

In FY14, PICSciE was awarded a grant from the National Science Foundation (NSF) Computer and Information Science and Engineering Campus Cyberinfrastructure - Infrastructure, Innovation and Engineering Program (CISE CC-IIE) entitled “CC*IIE Engineer: A Software-Defined Campus Network for Big-Data Sciences.” The $339,776 award will be used to hire a cyberinfrastructure engineer for a two-year term appointment. In the first year, the engineer will partner with faculty and IT staff to re-design the Princeton network for optimized movement of high-performance research data. In the second year, the engineer will continue with the design process while beginning to work with OIT staff to implement the plan.

The grant was submitted and will be administered through the Princeton Institute for Computational Science and Engineering (PICSciE). Gordon Y.S. Wu, Professor in Engineering, and Professor of Computer Science, Jen Rexford, served as Principal Investigator and Professor of Physics, Chris Tully, Associate Professor of Psychology, Nicholas Turk-Browne, and Director of Research Computing, Curt Hillegas, served as co-Investigators.

In addition to the CISE CC-IIE award, organized research and research computing equipment continue to be funded by five grants awarded to Princeton in previous fiscal years. Four were awarded by the National Science Foundation, and one was a sub-award with the California Institute of Technology:

- **G8 Initiative: Modeling Earthquakes and Earth’s Interior Based upon Exascale Simulations of Seismic Wave Propagation** ($499,796; PI: Jeroen Tromp)
- **G8 Initiative: G8 Research Councils Initiative on Multilateral Research Funding Nu-FuSE** ($469,246; PI: William Tang)
- **II-New: A Platform for Data-Parallel GPU Computing at Princeton** ($350,000; PI: David August)
- **MRI: Acquisition of a Shared Parallel High Performance Storage System to Enable Computational Science and Engineering** ($525,000; PI: Curt Hillegas)
- **Partnership for Edge Physics Simulation (EPSI)** ($46,099; PI: William Tang)

New software uses funding-based priority to schedule jobs on TIGRESS systems

Over the course of the Spring semester, the scheduling software that manages the jobs sent to the TIGRESS high-performance computing systems was changed from Moab to Open Source SLURM. With the task of managing more than 2 million computational jobs per year, the new software introduces significant cost savings, enhanced system stability, and the ability to better match scheduling algorithms to a funding-based priority model.

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In numbers...

- **3,456,064,083,197,952** bytes of storage
  - TIGRESS high-performance computing facility houses **243,924,513** files
  - TIGRESS backup system backs up **257,607,433** objects
  - TIGRESS HPC systems perform **5,463,452,896,815,880,381,399** floating point operations
  - TIGRESS HPC systems offer researchers **92,908,732,547,072** bytes of RAM
  - TIGRESS HPC systems offer researchers **84,030,176,152,781** hertz of processing power
Chief Information Security Officer (CISO) joins Princeton

In FY14, OIT engaged representatives of many offices at the University in a national search for Princeton’s first Chief Information Security Officer (CISO). Ellen Amsel was selected and joined Princeton in March.

As CISO, Amsel leads the newly formed Information Security Office (ISO) which is tasked with furthering existing OIT security programs and building new information security initiatives.

Amsel will play a critical role in envisioning, setting, and operationalizing an overall strategy to address institutional issues of information security in policy and practice, data governance, risk assessment, and business continuity.

The CISO also will work with campus partners to ensure compliance with the requirements of regulatory frameworks such as the Family Educational Rights and Privacy Act (FERPA) and the Payment Card Industry (PCI) standard.

‘Secure File Share’ service protects email attachments

In FY14, OIT introduced a ‘Secure File Share (SFS)’ service for faculty, staff and students to use when exchanging personal files through email. The service can accommodate files as large as 130GB and can be used to securely send files to individuals in and outside of the Princeton community.

With its strong encryption, transaction tracking, and other security features, SFS complies with the data protection requirements of FERPA and HIPAA legislation and provides a solution for situations when confidential information must be exchanged securely and privately.

The SFS service requires account registration. Files shared using SFS are securely erased from the server after 7 days.

‘PUaccess’ protects more core University enterprise business applications

In FY14, OIT added seven new applications to the growing list of core University enterprise systems protected by Princeton’s identity management system, PUaccess. Systems connected to PUaccess require log in through enhanced security profiles that include strong passwords, confirmation of anti-phishing images and phrases, and correct responses to security questions.

The connection to PUaccess also provides single sign-on/sign-off functionality, allowing users to sign in once and gain access to any of the other systems associated with PUaccess without having to reenter credentials. When logging off, users can choose whether to log off one or all systems.

Assessments and training help departments better secure their data

OIT made significant inroads in promoting IT security awareness through training and check-up services. To date:

- OIT conducted 80 security assessments, upon request, which explore a department’s susceptibility to system attacks and data exposure.
- 63 University departments and 1,100 individual attendees participated in IT security awareness training.
OIT Working Together to Secure University resources and data

Videos feature top security and privacy tips

Working with a video production firm, OIT scripted and produced two videos to raise awareness regarding the importance of information security. The videos highlight the easiest and most common ways for the University community to better secure technology and protect their personal information. One video imparts valuable security and privacy topics for students, while the other speaks to the issues that more directly affect faculty and staff.

Additional staff and monitoring reinforce network security

In January 2014, OIT received funding from the University Priorities Committee in support of several IT security initiatives that reinforce network and account security at Princeton. With this funding, OIT hired a security specialist to work with the staff of the OIT Support and Operations Center (SOC) to extend server and network monitoring to a 24/7 operation. Equipped with continuous monitoring and new tools, OIT can now detect and respond more rapidly to information security threats on campus.

Collaboration protects campus critical infrastructure

Key leaders from OIT, Public Safety, Facilities, Environmental Health and Safety, and University Services met several times in FY14 to share information about operations and planned changes to the University’s critical infrastructure controlling lights, air; temperature, Blue Light phones, life/safety, doors, and other “industrial control” systems across the campus. Representatives from the operational groups continue to meet regularly for the purposes of improving services and ensuring the careful coordination of major activities.

Monitoring improves security analysis and response time

In FY14, OIT employed a new security information and event monitoring (SIEM) system to gather and provide real-time analysis of security data. Since its installation in the spring, OIT security specialists have been using the tool to evaluate network traffic and differentiate between normal and abnormal patterns across the campus networks. With the information collected by the SIEM, OIT can perform broader analyses and respond more rapidly to attacks on University systems, reducing Princeton’s overall risk and exposure to information security threats.

Audits help to secure University assets and ensure reliability of OIT services

OIT works closely with departments to ensure the integrity of the University’s electronic assets. We also participate regularly in internal and external audits to discover and address any concerns that relate to information security. Recent improvements that were a result of the audit process include tighter access controls around the University’s physical data centers, new secure remote access service, investments in additional system redundancy for University business systems, and the acquisition of a security information and event monitoring (SIEM) system.
OIT technical support staff provide consultations remotely

This past year, with the installation of the Bomgar service, OIT technology consultants began providing technical assistance remotely.

Using Bomgar, OIT staff can access a client’s troubled computer and files and perform technical consultations without physically visiting the machine. These capabilities have greatly reduced the number of in-person consultations required (saving staff time and transportation costs) and have proven especially useful when assisting faculty, students, or staff who are off campus.

Remote consultations are secure. Session data is encrypted making it undecipherable while in transit between systems. When consultations conclude, the software installed to enable remote access is removed from the client’s computer.

OIT is actively exploring the use of Bomgar for additionally providing software, Blackboard, and OnBase support services. OIT is also evaluating the possibility of extending the use of this tool to members of the departmental SCAD/DCS technical support community.

New features and department-specific customizations with SharePoint 2010

Since its introduction in 2007, SharePoint has become one of the most widely used collaborative tools among faculty and staff with its more than 120 departmental site collections and more than 300 project sites. Last year’s project to upgrade SharePoint created the opportunity for OIT to enhance the functionality that users have come to expect, as well as reorganize the site structure to support department requests for greater control. The most notable improvements are the reorganization of project sites, the review and clean up of the departmental site collection, and the verification of all current site administrators.

In the new SharePoint environment, all projects (including Interdepartmental Project Portfolio (IPP) projects) are brought together on the main server, making sites easier to locate (especially for staff working on multiple projects) and easier to manage centrally for OIT. Inactive sites for completed projects have been archived.

Departments also realized significant improvements. In SharePoint 2010, a department’s sites are now organized into collections, which can be customized to meet the specific needs and preferences of the owner. Departments can also identify administrators who can provide front-line support for their collection and respond to requests for new sites, site development, and issue resolution.

As part of the project to upgrade SharePoint, OIT met with department site owners and consulted on the uses of SharePoint. Feedback collected during this process has led to several projects that will enhance the SharePoint service for all campus users.

At the conclusion of the migration, all project sites and departmental site collections were reorganized and migrated to the new system. Completed project sites were archived and a number of inactive sites were deleted.

In FY15, OIT will be exploring enhancements to the service through SharePoint 2013 and the features of Office 365.
OIT Working Together to Optimize administrative operations

’Safe’ enhancements coordinate more student activity funding and travel

OIT custom-built the Student Activities Funding Engine (SAFE) for the Office of the Provost, the Office of the Vice President for Campus Life, and the Office of the Dean of the College.

SAFE coordinates the process for funding undergraduate student activities. The system brokers student funding needs with funding opportunities and helps ensure fair and equitable distribution of funds (such as those used for senior thesis, summer study abroad, and internships and fellowships) to the greatest number of students.

SAFE also increases transparency and improves the efficiency of the funding process. SAFE enables the University to track and report on how funds, including endowed gifts, are spent at the University on behalf of students and creates numerous other workflow efficiencies.

This year’s work on SAFE extends support to additional processes, including funding for on-campus and group activities. SAFE also became fully integrated with Concur, the University’s new online travel booking and expense management system. Consequently, funding sources now have the ability to confirm approved travel before releasing funding to students.

As part of the PRIME financial project, SAFE was enhanced to process electronic payments to students through the University’s Accounts Payable system or through a direct electronic transfer by way of the general ledger system.

Administrative operations benefit from document management solutions

In FY14, OIT worked extensively on a second phase of enhancements to the document management solution that supports the undergraduate admissions process. New functionality provides integration with PeopleSoft and introduces sustainable efficiencies that improve application processing.

Several new document repositories were also developed and deployed and include solutions for the Office of International Programs, the Department of Ecology and Evolutionary Biology, the Office of Trademark Licensing, and the Office of Technology Licensing.

OIT is currently working on more than 60 document management solutions for University departments that are in various stages of the project life cycle.

Document management solution improves salary action process

Each year, the Office of Human Resources receives more than 150 requests to review and analyze employee job responsibilities and corresponding salaries for possible adjustment. Until this year, the process for responding to these salary action requests was a manual one, requiring redundant data entry, multiple handoffs, and several levels of approval to complete. The University staff responsible for reviewing and collaborating on these requests relied on email to exchange information with one another throughout the process. In the absence of programmatic tracking and coordination, it was difficult to know the status of any particular request.

In FY14, HR and OIT staff worked together to design an OnBase document management solution to improve the salary action process and add efficiencies that would ensure data accuracy and expedite the salary action process. The solution that resulted from the collaborative effort eliminates the need to re-key data from PeopleSoft to forms; includes programming that ensures correct data is entered into fields, integrates internal and external digital content, and facilitates improved communication among the staff involved in the process. Contributing to overall efficiencies, the solution also employs greater process standardization, automated workflow, approvals, and details that indicate the status of each process.
More security, access, and bandwidth for the wireless network

OIT completed the third year of a 5-year plan to upgrade the campus wireless infrastructure with new network access points. The upgrade positions the University to take full advantage of the many benefits of eduroam—the federated network access service in which Princeton currently participates. The areas of campus now serviced by eduroam provide secure wireless service, seamless access for eduroam users (across higher-ed), and notably greater bandwidth. Ongoing appliance upgrades continue to expand the areas of campus covered by the eduroam service.

Network connections move data 10x faster

Research data at Princeton now moves across the campus network at speeds that are ten times faster. OIT is in the process of systematically upgrading network links between buildings and the network core from 1Gbs to 10Gbs. To date, eight campus buildings have been upgraded. The 10Gbs service has also become the standard for all new construction on campus.

The upgrades improve network connectivity within buildings, between buildings, and between campus and the High Performance Computing Research Center (HPCRC).

Backup generator protects the campus network

Fiber links from all campus buildings traverse the campus and concentrate at the campus’ network data center. December 2013 marked a major milestone at this data center, as a backup generator was installed and commissioned to guard against the disruption of campus network services in the event of extended power outages.

The remediation of this single point of failure helps ensure the flow of information for research, administration, and the critical infrastructure controlling lights, air, temperature, Blue Light phones, life/safety, and other industrial control systems across campus.

New hardware ensures database service continuation

OIT continues its efforts to ensure critical IT services are up and running without interruption. To that end, key investments continue to be made for system and storage redundancy.

In FY14, OIT invested in a secure, powerful system to make the University’s enterprise database systems redundant. Through Oracle’s Exadata machine, the University’s systems now have strong protections against service interruptions caused by anything from hardware failures to the loss of one of the University’s data centers.

Wireless projection and streaming with AirPlay

In FY14, OIT implemented a technology solution in non-residential buildings across campus to support wireless streaming of content from Apple iOS devices. Through AirPlay, the campus community can wirelessly project and stream content to any screen or monitor fitted with Apple TV service.
OIT Working Together to Support access and connection

OIT server virtualization service continues to grow

OIT’s virtual infrastructure supports most central OIT services and provides a no-cost solution for departments to host dedicated virtual servers. As of June 2014, more than 950 virtual servers are supported in the virtual server environment built with 276 CPU cores, 5.4TB of memory, and more than 150TB of disk space. To date, OIT has virtualized 80% of the centrally-managed administrative and departmental servers. Twenty-seven percent of all virtual servers are managed by departments across campus.

Virtualization efforts reduce University CO2 emissions by 1,600 metric tons and realize an annual cost savings of more than $400,000 per year in energy costs.

Princeton Google Drive for graduate students, faculty and staff

In response to requests for tools that better support collaboration and the ability to access files from anywhere, OIT implemented Princeton Google Drive for graduate students, faculty, and staff. The accounts include Google Drive and Google Sites applications, and the specialty tools associated with them.

Students, faculty and staff can use Google Drive to share files with one another or share files with peers and colleagues outside of the Princeton campus. Drive can also be used to collaborate simultaneously and in real-time with others on a document, spreadsheet, or presentation. The cloud storage offered by the service supports file synchronization across devices and convenient access from anywhere.

Google Sites provides the tools for designing personal websites.

University backup service moves to the cloud with Princeton CrashPlan

Princeton CrashPlan file backup service made a first appearance in departments in April 2014. The service is especially for faculty and staff and is used to back up files on laptops and desktops. The new cloud-based solution offers the most robust features in backup service today, including frequent backups, self-service restores, and strong security.

Princeton CrashPlan backs up data on a regular schedule throughout the day. No more having to revert back to a last saved version of a file that is, at best, a day old.

Users can log in to their backup account from any browser and restore their files anytime, anywhere, and on any device. A mobile version, ‘CrashPlan PROe,’ is also available for self-service restores from a mobile device.

Princeton’s data is backed up to data centers in the US that comply with strict security standards for cloud backup and use an industry-standard and robust encryption process.

The backup service is available to departments at no charge and replaces the aging TSM backup service. At the end of FY14, more than 3,000 computer backup accounts were moved to the new service. The campus move to Princeton CrashPlan will complete at the end of summer FY15.
FY14 Timeline

July 2013

- Undergraduate math majors can submit Junior Papers electronically for the first time. Working closely with administrators in the Math department, OIT developed a solution that enables students concentrating in Math to submit their Junior Papers online. The new electronic process results in efficiencies and clear improvements over the past process of physically delivering printed papers to the Math office. The new system also builds on continued campus-wide sustainability efforts.

- Blackboard upgrade introduces new video and ‘Meeting Place’ features for course dialog and collaboration. A new ‘Video Everywhere’ feature allows faculty and students to incorporate videos into their teaching, learning, and sharing experiences. Using the tool, faculty and students can record a video using a standard computer webcam and then embed the video into their course materials, interactions, and feedback. The What-You-See-Is-What-You-Get (WYSIWYG) editor makes adding video content easy in Blackboard Learn. The new Blackboard also integrates with popular WordPress Blog and Piazza tools, which further encourage course collaboration and discussion. Instructors can easily set a Piazza gathering place for their course, where students can ask, answer, and explore 24/7, under the guidance of instructors.

- DeSC offers 5 computer management options for a ‘perfect fit.’ The DeSC Program offers two new managed environments to provide lightly managed options and greater flexibility for both Mac and Windows environments.

August 2013

- New website helps Drupal developers and editors at Princeton. The OIT Web Development Services (WDS) group created a Drupal support website. Princeton web developers and editors can refer to the site for self-help documentation, for training resources, and to learn about Drupal hosting options. The site also highlights user groups and events sponsored by the broader Drupal community.

- OIT assesses tools to simplify campus computer management services and include more computers. OIT completed assessments and proof of concept work that will change the University’s current computer management program to a hardware-independent solution so Princeton’s managed computer programs, including DeSC, Clusters, and possibly the Student Computer Initiative (SCI), can serve greater numbers of campus computers.

- New LabVIEW campus license for Princeton researchers. OIT negotiated a campus site license for National Instrument LabVIEW software. With the new site license of LabVIEW, departments and students realize significant savings on both institutional purchases and student personal purchases. LabVIEW software supports the engineering and science research efforts of University researchers.

The DeSC program is managed by a campus-wide Desktop Systems Council (DeSC) committee.
**September 2013**

- **New website features collaboration and conferencing technology tools on campus.**
  The Collaboration & Conferencing Technologies website, at www.princeton.edu/collaboration, describes collaborative scenarios that are commonly used to support course projects and business initiatives, and recommends best tools, features, and practices for each. The website is a resource to help members of the University community choose the best tools for organizing information, sharing resources, and conducting remote meetings.

- **OIT offers new service for hosting University Drupal websites.** OIT negotiated special pricing with a cloud-based provider for hosting and supporting University Drupal websites developed by departments, OIT Web Development Services (WDS), and outside vendors. The new hosting option is intended for departments that have a website budget, have experience with Drupal, require full access to the Drupal application, and would like additional support for their Drupal website.

- **OIT develops training classes for beginning project managers.** The first of the two classes, Project Management for Princeton Projects, prepares participants to manage projects using the Princeton Project Management Methodology. The second class introduces tools that can be used to facilitate project management, such as checklists and SharePoint project repositories. Both courses were offered in the Spring of FY14 and are open to all University faculty and staff.

**October 2013**

- **Alumni and parent volunteers use new registration application to gain access to TigerNet resources.** OIT developed and launched an application that enables alumni and parent volunteers to establish and reset their credentials for gaining access to secured University applications that provide alumni services, such as TigerNet. The application includes an administrative help desk module and is responsive in design to support mobile access.

  Staff from the Alumni Council and Alumni and Donor Records offices have reported that the new TigerNet registration application, with its improved self-service interface, has significantly reduced the number of alumni authentication issues.

- **Redesigned and more secure Department of Philosophy website launches.** OIT Web Development Services worked with Department of Philosophy staff to build a new website that would be easier to manage and better protected against security breaches. The site was developed in the Drupal content management system. The redesign highlights alumni of the Philosophy department. The website can be viewed at http://philosophy.princeton.edu.

- **OIT collaborates with vendor on Drupal templates for low-cost, self-service website option for Princeton departments.** The templates will offer an inexpensive and quick startup option to departments seeking to publish a website in the Drupal content management system.

- **‘OIT Staff Directory’ redesigned as a resource for the University community.** The online directory provides a listing of all OIT employees. Each employee entry includes a photo, department and group details, and contact information. Searches can be performed by name, department, and workgroup. The OIT Staff Directory is an internal resource for the campus community and can be found on the www.princeton.edu/oit/about page.

- **New Philosophy Department website highlights department alumni.**

  Campus community finds the right conferencing and collaboration tools with the help of new site: www.princeton.edu/collaboration

  New Philosophy Department website highlights department alumni.
Prime Portal provides quick access to popular financial information and places. Working from the ideas of OIT, the Office of Finance and Treasury, and members of the Princeton Prime project team, OIT develops and designs a portal to support the Princeton Prime Project and ongoing financial business. The site, at http://prime.princeton.edu, centralizes access to a number of financial applications and websites, including the Travel and Expense system, financial reporting, and support documentation.

Newly redesigned website encourages sustainability initiatives at Princeton. OIT developers and designers work with the Office of Sustainability on the design and development of a site that features information on how the University community can Get Involved, Explore Campus as Lab, and View Progress on sustainability plans. The website was developed in Drupal and can be viewed online at http://sustain.princeton.edu.

Application server migration supports custom .NET application development. The migration involved designing, configuring, and deploying four highly-scalable and highly-secure application servers that run Windows Server 2008. The new servers provide the framework to support custom Microsoft .NET 4x application development, deployment, QA testing, registration and production hosting for University departmental and administrative needs. Twenty custom departmental .NET applications were successfully ported and deployed into production as part of this project.

Princeton University Learning Series (PULSe) hosts a live webinar on web and video conferencing technologies. The presentation is a primer for the conferencing beginner that introduces popular web and video conferencing tools and their uses. A recording of the webinar is available from the PULSe library at www.princeton.edu/pulse.
January 2014

**New OIT service provides technology contract and vendor management support to the University community.** The new Contract and Vendor Management group was created in response to requests from departments for more assistance with vendor contracts for IT services. The group helps departments navigate and review IT service contracts and identify any issues. The service is especially helpful to the campus as more IT services move to cloud services. The unit also provides important vendor oversight for a coordinated, broader view that results in deliverables that match contract expectations, timeframe, and budget.

**New Princeton Travel and Expense portal supports Concur system.** Working from the ideas of the Office of Finance and Treasury and members of the Concur project team, OIT designed and developed the Princeton Travel & Expense portal. The site provides travel and expense related information, such as travel suppliers and forms and guidelines for faculty and staff, undergraduate students, graduate students and guests. Users can also log into the Concur system from this site.

**OIT hosts “3rd Annual DrupalCamp NJ” on campus.** The annual event offers a wide variety of Drupal-related sessions and, above all, the opportunity for Drupal users to network and build community with one another through birds-of-a-feather sessions and social events. Special pre-camp community training day and post-camp code sprint events are popular with attendees.

**April PULSe webinars feature user tips and tricks for Report Studio and OnBase.** Webinar presenters show how to create mail-merge and letter reports using Report Studio as well as provide an introduction to OnBase and advanced functionality for managing document processes electronically. Recordings of webinars are available from the PULSe library at www.princeton.edu/pulse.

February 2014

**OIT introduces a single queue for OIT and library printers and mobile printing.** Both printing upgrades make printing to cluster printers even more convenient for students. With a combined queue, students can choose to release their print jobs at any OIT cluster or Library printer. With new support for mobile printing, students can send print jobs to centralized printers from their mobile devices.

**Faculty, graduate students, and staff get Google Drive for collaboration and file sharing.** In answer to requests for collaborative tools and the ability to access files from anywhere, OIT makes available Princeton Google Apps accounts to all graduate students, faculty, and staff. Drive and Sites apps, and the specialty tools that go along with them, are provided with the accounts. Drive makes it easy to share files with colleagues on campus and off. Users can also collaborate and author in real-time to produce documents, spreadsheets, and presentations. Files stored in Drive are synchronized across all devices and are accessible from anywhere.

**OIT Tech Clinic extends daily hours.** The OIT Tech Clinic extends its evening hours to 6:30pm. The increase in service hours supports a greater number of consultations and hours that better support student schedules and availability.

**Mobile Loaner Program adds more types of devices.** The popular Mobile Loaner Program, which lends technology devices to the campus community, adds tablets and adapters to the technology available for checkout. Through the program, faculty and staff can borrow smart phones, mobile hotspots, and iPads for University business. Faculty, staff and students can also borrow Apple adapters.
March 2014

- **OIT welcomes Chief Information Security Officer to Princeton.** The new CISO reports to Jay Dominick, Vice President and CIO, and leads the newly formed Information Security Office (ISO) within OIT. The ISO is responsible for building on existing security programs and furthering OIT’s information security initiatives into new areas. The CISO also plays a critical role in envisioning, setting, and putting into operation an overall strategy to address larger institutional issues of information security in the areas of policy and practice, data governance, risk assessment, and business continuity.

- **Speaking of Princeton blog gives student perspective to prospective students.** Developed by the Undergraduate Admissions office and brought to fruition by OIT designers and developers, the blog provides a platform for current students to share their experience at Princeton with potential applicants through blogging. Student blogs cover a range of topics central to the student experience at Princeton. The blogs can be viewed online at http://admission.princeton.edu.

- **New system manages requests for placement in Freshman Seminars.** The result of a multi-year project and a collaboration between the Office of the Dean of the College (ODOC) and OIT, the new Freshman Seminars system allows incoming students to request placement into a freshman seminar. Students choose up to 5 seminars, indicating their order of preference, and submit an essay online. Once all freshman selections have been entered, the system works to optimize seminar assignment, based on choice and input from faculty and the ODOC. Ideas for future freshman seminars can also be submitted and collected using this system.

- **OIT hosts a live webinar on getting beyond the basics of social media.** Given by Dan Day, of the Office of Communications, the webinar offers practical tips for engaging more people and growing your following in Facebook and Twitter. Day also shows how to use tools like HootSuite to more easily monitor and post to all of your social media accounts. A recording of the webinar is available from the PULSe library at www.princeton.edu/pulse.

April 2014

- **Princeton CrashPlan provides easy and secure backup of data.** OIT announces ‘Princeton CrashPlan’ as Princeton’s new computer file backup service. The service is especially for faculty and staff and can be used to back up files on laptops and desktops at no charge to departments. CrashPlan is a cloud-based solution that offers frequent backup, self-service restores anytime, anywhere, on any device; and security in the cloud. The service replaces the TSM computer backup service.

- **Jeanne Mrak receives Presidential Achievement Award (PAA).** Mrak, a Senior Technology Training and Development Specialist for OIT, is one of five University staff to receive this year’s award, which recognizes exceptional dedication, extraordinary efforts, and exemplary service. In her nomination, Mrak’s work to envision, execute, and manage a Business Technology Program (BTCP) that provides a certificate-based development opportunity for campus administrative staff was highlighted, along with her personal dedication and attention to campus-wide training needs.

- **Sal Rosario receives Donald Griffin ’23 Management Award.** Rosario, Senior Manager for OIT Technology Consulting Services, is one of two members of the University staff chosen to receive this year’s award. This award recognizes administrative staff who are on a personal path to developing their leadership and management skills. Rosario’s nomination highlights his active participation and contribution to numerous higher education and IT organizations, and the consultative engagements that have helped guide transformative and critical campus projects to success.

- **OIT plans 3-year roadmap to cloud-based offering of centrally-provided productivity tools.** The roadmap addresses transition plans over the next three years for the common, core services on campus, such as email, office productivity tools, collaborative tools, and conferencing tools. With careful and strategic planning that takes into consideration licensing timeframes, the goal is to move these services to a cloud- and choice-based offering by 2017.
May 2014

- The ‘Your Path to Princeton’ website welcomes the Class of 2018. The website welcomes the class of 2018 and provides incoming students with the information they need know before arriving to campus. New to the website this year is an updated home page with an area to feature Learning at Princeton and Living at Princeton articles.

- ‘Art of Science’ registration and submission website calls for scientific art entries from the University community. A collaboration between OIT and the School of Engineering, the Art of Science (AOS) system automates facets of the Art of Science competition. Using the system, University faculty, students, and staff register for the competition and submit their artwork online. Once online, AOS committee members can view the submissions and enter them into the competition for judging. Winning entries are highlighted on the main AOS website. The extensible design of the AOS system allows future expansion for supporting competitions at other institutions.

- Data Science Symposium for computational scientists and researchers held May 16. The symposium provided a full-day program of presentations, posters sessions, and open discussion forums on data science. Organized and sponsored by the Princeton Institute for Computational Science and Engineering (PICSciE), the conference brought together computational researchers and scientists from across campus to explore research topics ranging from the neurosciences to the digital humanities. The event was co-sponsored by the Office of the Dean for Research.

- New OIT computing cluster printer provides color printing option for students. OIT installed a high-capacity color printer in the Frist computing cluster. Students are given a 200-sheet annual quota for color printing and can print to the printer from their computers and mobile devices.

- OIT offers training in advanced project management concepts. Project Leadership provides strategies for experienced project managers to improve their leadership qualities through the LEAD (Listen, Encourage, Act, Delegate) principle. The second course explores project risks, issues, action items and decisions, and offers best practices and the ‘RAID’ tool for tracking them throughout the project.

June 2014

- Princeton’s new Secure File Sharing service is introduced to campus. With it, faculty, staff and students can securely send files as large as 130GB in an email to individuals inside and outside of Princeton. This service complies with FERPA and HIPAA security requirements and provides a solution for situations when personal or sensitive information needs to be exchanged securely and privately between two parties.

- BlackBoard upgrade features enhance course collaboration and management. Now, instructors can integrate Google Docs and Google Sites into their Blackboard courses and easily connect and collaborate with students through their Princeton Google accounts. Course Management enhancements offer improvements in the Grade Center and with Test and Survey creation and management.

- Princeton’s media site, ‘Media Central Live,’ gets a new look. Live Media broadcasts live events to the web. In addition to events, a listing of live channels offered to the University community can be found on the website. The design was implemented to coordinate with Media Central service, which provides a central repository for storing, managing, and delivering video and audio content.

- More administrative staff earn certificates from the Business Technology Certificate Program (BTCP). Staff who completed the 3-year program and received a certificate of completion that recognizes new proficiency and skills in technology. This year’s graduates brings the total number of BTCP graduates to 37 staff.

- Student Computer Store opens and offers Apple and Dell computers. SCI computers are configured for academic use at the University, specially-priced for Princeton students, and fully supported on campus by Office of Information Technology technical staff. The 2014-15 program offers five computer models, all with the latest operating system and a suite of pre-installed software.

- New data center hardware provides more and faster high-speed connections to data center servers. OIT installed data hardware in New South to provide 200 high-speed connections to the servers in the data center, over the 8 connections that existed in FY13. The speed of the connections is also 10 times faster with 10 GBs service instead of 1GBs.
floating point operations performed by TIGRESS high-performance computing systems
bytes of storage offered by the new high performance storage system
bytes of data stored in the Tigress high-performance computing facility
bytes of data kept safe by the Tigress backup system
bytes of RAM on the TIGRESS high-performance computing systems
hertz of processing power in the TIGRESS high-performance computing systems
bytes of faculty, staff and graduate student email stored in MS Exchange
bytes of undergraduate student email stored in Princeton Gmail
bytes of data in centrally-managed Oracle database environments
bytes of data in centrally-managed Microsoft SQL Server database environments
bytes of data in centrally-managed MySQL database environments
bytes of data in centrally-managed Microsoft SQL Server database environments
bytes of data in centrally-managed MySQL database environments
email messages travelled through spam/virus filtering systems with 83% of messages being rejected.
email messages quarantined by Princeton Proofpoint
page views in the new SharePoint 2010 system, averaging 8,680 views per day
jobs run on the high-performance computing systems
files stored in the new Princeton Google Drive
calls handled by the Unified Messaging system, 33% left messages
reports generated from the Information Warehouse
posts processed by the LISTSERV system
page views in the Blackboard Learning Management System on the busiest day
hours spent logged in at the OIT cluster computers across campus
unique devices were supported by Princeton’s network
logins into OIT cluster computers across campus
donations processed by the Stripes system
requests for assistance logged in OPM, and addressed and closed by support staff in the various departments of OIT
average daily page views in the Blackboard Learning Management System
office hour appointments scheduled through the OIT Web Appointment Scheduling System (WASS)
OPM tickets for assistance addressed and closed by the OIT Support and Operations Center (SOC) 24/7 resource
...Numbers 2014

23,645 **calls to 8-HELP requesting technology assistance** from OIT Support and Operations Center (SOC) consultants

19,376 print jobs sent to printers at the OIT computer clusters using the **new mobile printing service**

10,421 university machines protected by **campus security management software**

9,435 University computers centrally managed and kept up-to-date by OIT

7,256 students printed to **OIT computer clusters printers**

6,490 check-ins for computer support at the **OIT Solutions Center Tech Clinic**

4,736 sheets printed to the **color cluster printer** since its introduction in May

4,497 requests for hardware support addressed by OIT Hardware Support staff

3,894 undergraduate students sought technical assistance from the **OIT Solutions Center Tech Clinic**

3,348 user computers backed up to the new Crashplan backup system by June 2014

3,293 films streamed to Blackboard course websites

3,176 **requests for technology help through online chat with the Support and Operations Center**

1,709 databases centrally managed by OIT

1,511 **requests for software support** addressed by OIT Software Support staff

950 **virtualized servers** run on 19 centralized servers

860 **software support engagements** handled remotely with remote support technology

791 **office hour appointments** scheduled through the OIT Web Appointment Scheduling System (WASS) on April 4, 2014

397 **requests to borrow mobile technology** from the Mobile Technology Loaner program

336 Requests for new servers, of which 88% are requests for virtual servers

275 **unique attendees join 17 PULSe webinars** and represent 70 departments

262 **video conferencing sessions were held** with 1,256 attendees for 174,851 minutes, in total

105 **database servers** centrally managed by OIT

65 **percent of the total visits to the OIT Solutions Center Tech Clinic were by undergraduate students**

53 technical support staff from OIT and the SCAD/DCS community use remote support capabilities to provide technical support to the University community

19 centralized servers run **950 virtualized servers**

1 roadmap will guide OIT technology planning and resource allocation
IT Advisory Teams at Princeton

Data Governance at Princeton

This year, under the direction of the Vice President and CIO, OIT formed an ad-hoc Data Governance Steering committee comprised of executive-level staff from key University offices. The steering committee provides a structure for campus-wide discussions about protecting Princeton data and for guiding campus initiatives that relate to the use of University information. Offices directly represented include the Office of Finance and Treasury, Office of the Registrar, Office of the General Counsel, Office of the Dean of the Faculty, Audit and Compliance, Human Resources, Office of the Executive Vice President, and Office of Information Technology.

Discussions by the Data Governance Steering Committee led to the formation of several sub-committees charged with developing policies and practices that will both drive and support data governance at Princeton. Two sub-committees are producing a first-ever University Privacy Policy and updating the Information Security Policy. A third team serves as an advisory group that serves to continually address operational data management issues.

The subcommittees are making good progress on their charges. In particular, the Information Security Policy is being greatly assisted by the Chief Information Security Officer (CISO) hired this year, who brings an expertise and recommended approach to the University’s Information Security Policy.

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<thead>
<tr>
<th>Data Governance Steering Committee</th>
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<tbody>
<tr>
<td>The Data Governance Steering Committee is a committee of Cabinet-level University administrators (or their designees) who are considering issues of stewardship and consistent use of institutional data across business units. Committee members are familiar with information access, security, and quality policies and practices within their business area and, together, consider the appropriate application of each of these to further the strategic goals of the University. Members are cognizant of the regulatory mandates with which the University must comply.</td>
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<tr>
<th>Information Security Policy</th>
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<tr>
<td>The Information Security Policy subcommittee is charged with updating the University’s current Information Security Policy to address the vast changes in information security since its last update in 2009, and to develop and implement a process for ongoing regular reviews.</td>
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<tr>
<th>Privacy Policy</th>
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<tr>
<td>The Privacy Policy subcommittee is responsible for developing an over-arching privacy policy following the guidelines set forth by the Data Governance Steering Committee. The subcommittee will create a policy that addresses privacy matters; informs the faculty, students and staff of the personal information Princeton maintains; and explains how the information is used, whether it is shared, and the level of privacy they can expect the University to uphold.</td>
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<tr>
<th>Data Management Advisory Group</th>
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<tr>
<td>The Data Management Advisory Group is focusing on issues of data management as they relate to student, employee, faculty, financial, and health record data. The group is assessing best practices and issues relating to data classification, data sharing and developing mechanisms for data access approvals. The group is identifying additional areas that need to be addressed to safeguard and support the proper use of Princeton’s data.</td>
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Enterprise Systems Planning Group (ESPG)

The Enterprise Systems Planning Group (ESPG) critically assesses all IT systems efforts, determines existing needs, and identifies key opportunities to leverage University IT investments. The specific charge of this group is to ensure University's systems meet the needs of faculty, staff, and students; recommend the appropriate allocation of OIT resources for maintenance, upgrades, and development; and endorse project proposals that pass to the Senior Advisory Group on IT (SAGIT) for further review.

Project Managers Team (PMT)

The Project Managers Team (PMT) provides leadership and guidance on the delivery of administrative products and services, supporting application and data management principles. The PMT works in support of the ESPG.

The specific charge of the group is to identify, assess, and prioritize mandatory maintenance and enhancements to University systems; coordinate systems requirements across offices and departments; facilitate activities that foster the improved use of IT products and services at the University; and achieve the highest level of customer satisfaction in meeting the IT needs of the University community.

Managers representing more than 50 departments across campus and OIT comprise the PMT.

Research Computing Advisory Group

The Research Computing Advisory Group (RCAG) advises and collaborates with OIT, PICSciE, and the Dean for Research on matters related to research computing in all academic disciplines at the University. The specific charge of this group is to advise on the research computing needs and priorities of academic units; collaborate on and ensure broad input on projects related to research computing; and advise on the software, infrastructure, and support needs and priorities for research computing.

Senior Advisory Group on IT (SAGIT)

The Senior Advisory Group on IT (SAGIT) is the University committee to review, approve, and fund IT projects.

The specific charge of the group is to evaluate systems project proposals, and review the proposed funding mechanisms for associated capital and operating expenditures for the systems; assess steady state costs of maintaining current systems and required IT infrastructure; ensure projects are fiscally responsible, and assess whether proposed funding mechanisms are satisfactory; and advise the Provost with regard to budgetary or other issues posed by projects.

Data Center Advisory Group (DCAG)

The Data Center Advisory Group (DCAG) collaborates with OIT, PICSciE, and other key stakeholders to advise the Vice Provost for Space Programming and Planning and the CIO and Vice President for Information Technology on matters related to data center space and resources supporting research and enterprise computing at the University.

The specific charge of this group is to advise on the computing center needs and priorities of academic and administrative units; provide input and data to assist OIT and Facilities in providing shared computing center infrastructure; collaborate on and leverage common interests for various projects related to shared data centers; and provide ideas and feedback regarding University policies and guidelines affecting shared data centers.

Departmental computing, Facilities, PICSciE, and OIT staff comprise the group that meets monthly.

Princeton University Training Team (PUTT)

The Princeton University Training Team (PUTT) is responsible for creating and managing a holistic and integrated training framework for developing management and staff at Princeton. The team is comprised of representatives from the offices of Environmental Health and Safety, Finance and Treasury, Human Resources, and Office of Information Technology.

The team meets regularly throughout the year to develop and manage the University’s learning program for staff, with a goal to continually provide high quality and relevant learning opportunities. The PUTT also manages the University’s central training management system.

Desktop Systems Council (DeSC)

The Desktop Systems Council (DeSC) works to standardize the University’s administrative desktop computer environment. The Council provides a stabilizing influence so the various computing environments’ organizational concepts, directions, and projects are established and maintained with a farsighted view. The Council provides insight on long-term strategies in support of University mandates and OIT initiatives. Members of the Council ensure that the University’s business and academic objectives are adequately addressed, and information technology remains under control. The goals of the Council are to streamline the costs associated with hardware procurement, application development, software installation, computing support, system administration, and software licensing; ensure that the standard administrative computing environment is sustained; enhance the delivery of administrative systems and productivity tools.
Advisory Teams to OIT

Technical Change Council (TCC)

This past year, OIT formed a Technical Change Council (TCC) to track, review, and advise on all changes to central systems and services that impact the campus.

The TCC is comprised of seven core members who facilitate a weekly technical change meeting, during which upcoming changes are reviewed. With the goal of remediating or minimizing risk, the council (and all who are in attendance at the open meeting) discuss the changes and ensure proper testing has taken place; a plan for back out and remediation exists; the change is scheduled at a time that will not impact the critical business operations of the campus, a communication plan exists, all documentation and training is in place prior to the implementation, and that conflicting/interdependent changes are prioritized.

In the first six months of its operation, the TCC change review process identified several potential conflicts among planned changes, which were remediated. Several change management process improvements were also realized as a result of the TCC and its collaborative process.

A SharePoint application was built to support TCC change tracking and review efforts, as well as inform members of the TCC-meeting email list of upcoming changes through automated notifications. The changes that are up for discussion at the weekly meeting are sent the morning of the meeting. The results of the meeting are sent following the meeting. All members of the campus community are welcome to join the TCC-meeting email list and attend meetings.

The seven core members of the TCC represent departments across OIT and include Matt Immordino, Robert Knight, Charles Kruger, Paul Lynn, Mariann Miller, Kevin Perry, and Leila Shahbender.

Disaster Recovery Team

The Disaster Recovery team maintains a disaster recovery plan in case of a major disruption to the computing services at the University data centers. In plan identifies the resources and actions needed to restore the campus network and computing infrastructure in the event current facilities are impaired. The plan also provides a timeline for the restoration of campus network and Internet connectivity; a timeline for the prioritized restoration of academic and administrative applications; a prioritized list of computing services and the steps needed to re-establish the operation of these services; specific information about the location of backup data and restoration procedures for critical applications and services.

The team continually identifies improvements to the computing environments that can reduce the time needed to restore services in a disaster situation, as well as evaluates the network infrastructure, server deployment, and operational procedures to discover ways to increase the availability of computing services to the campus community. The team also consults with academic and administrative departments about their business continuity plans for continuing University operations in the event of a major disruption to campus computing services.

Architecture Review Board (ARB)

The Architecture Review Board (ARB) conducts technical reviews of the IT architecture for Princeton University projects that involve IT application and infrastructure deployment or University system enhancements.

The intent of the reviews conducted by the ARB is to identify and remedy any technology issues in the project early on, resulting in fewer implementation issues and a likely reduction in costs for the overall project and future operational and maintenance costs.

With each project review, the ARB produces a summary of any risks identified during the review and suggestions for minimizing or eliminating those risks. If discovered, suggestions and observations that can contribute to the prospects for successful implementation are also noted.

IT Security Team

The IT Security Team develops and maintains an IT security strategy that minimizes the risks to the University’s electronic information, to enable the University to comply with its institutional and legal obligations for electronic data, and to support the University’s mission.

The team is chaired by the Information Security Office and includes representatives from Academic Technology Services, Administrative Information Services, Enterprise Infrastructure Services, Support Services, and members of the SCAD/DCS program.

To support its mission, the IT Security cross-functional team’s goals are to maintain an inventory of IT security responsibilities, identify actual and potential IT security-related initiatives, identify cases where OIT and/or customer initiatives conflict with the IT security strategy, investigate and propose alternatives, and keep each other informed of the status of each OIT department’s IT security-related efforts.
The OIT Leadership Group

The OIT Leadership Group is comprised of OIT managers and leaders who meet monthly to carry out the mission of the group, which is to:

• Serve as change agents for improving the effectiveness of the OIT organization by evaluating and recommending initiatives to the OIT Cabinet and leading all such approved efforts;

• Foster collaboration among OIT leadership. The group participates in regularly scheduled meetings, and optional activities, and forms ad-hoc sub-groups as needed. The forums provide opportunities to strengthen relationships, inspire and exchange ideas, and promote dialogue among its members;

• Provide opportunities for professional development activities. The group enhances management and leadership competencies among members;

• Provide cross-organizational communication for OIT projects and operational issues. The group provides a forum to discuss projects on the OIT Interdepartmental Project Portfolio (IPP), as well as discuss OIT operational issues.