Welcome

Investments in innovation, teaching, learning, research, and infrastructure are of fundamental importance to our future at Yale. Listening to our community is essential to satisfying the diverse technology needs of the University.

Faculty, staff, and student satisfaction with IT services has increased from 50 to 77 percent over the past two years as a result of a number of improvements in our core foundational technologies, security, and services (see Incremental Service p. 20). Our goal is to increase faculty and staff satisfaction with IT to more than 90 percent. To achieve this goal, we must listen, collaborate, and deliver within our operational and fiscal constraints (see Challenges p. 19). Also, IT must be a catalyst for innovation, improvement, and functional excellence.

In order to reach our goals with the resources that are available to us, IT must be fully transparent and aligned with the collective goals of the University. As we enter into the 2014 fiscal year, our new IT governance model (see Governance, p. 16) will complete its first full year in service. As this structure continues to evolve and mature, IT will become a stronger contributor to the overall success of the University.

We welcome your interest in technology at Yale and invite you to visit our website and provide us with your feedback.

Sincerely,

Len

Len Peters
University Chief Information Officer
Associate Vice President

Table of Contents

3 About ITS
4 Teaching & Learning
7 Research & Medicine
8 Campus Community & Beyond
11 Foundations
16 Strategy & Governance
19 IT Challenges
20 Incremental Services
21 CIO Spot Award Hall of Fame

Connect with ITS

its.yale.edu
Monday Morning News
Subscribe via its.yale.edu/news
Twitter: www.twitter.com/yaleits
Facebook: www.facebook.com/yaleITS
Yammer: www.yammer.com
Instagram: www.instagram.com/yaleits
About ITS

Information Technology Services (ITS) provides computing and communications infrastructure, services, support, and innovation for Yale’s instructional, research, public service, and administrative programs. ITS provides one-on-one support for individuals across campus, and works with many departments and organizations to provide a wide range of services for students, faculty, staff, alumni, and others.

ITS Objectives

ITS as an organization has six objectives that drive everything we do—rock solid services, global recognition, technology leadership, fiscal management, community satisfaction, and staff development. Through these objectives, ITS endeavors to bring the highest level of technology service possible to all staff, faculty, and students and to deliver technology leadership that furthers the University’s mission. ITS strives for a reputation that equals that of the great University we serve.

Listening to the Community

A central part of providing rock solid services for Yale involves listening to the needs of the community. ITS places great emphasis on a variety of initiatives to stay in touch with the faculty, staff, students, and alumni we serve. In 2012, we held Voice of the Community sessions with individuals and leaders to gain a greater understanding of the perception of our services and ITS as an organization.

In 2013, ITS initiated a strategic governance structure that includes special interest groups with representatives from across the community (see Governance, p. 15). In collaboration with the Professional Schools and the University Library, ITS delivered the first campus-wide satisfaction surveys to gather data and information on our existing services. In addition, ITS launched a brand-new website in an effort to update, streamline, and enhance self-service capabilities and interaction with our organization and services.

Evolving & Growing

Information technology is increasingly woven into the fabric of how we teach, learn, build communities and communicate. Yale is exploring a multitude of new opportunities, most in some way connected to the evolving cloud landscape. A few of the trends that ITS expects to have the greatest impact on higher education are Bring Your Own Device (BYOD), the increase in mobile devices, Massively Open Online Courses (MOOCs), social media, cloud technology, security and privacy compliance and standards, and big data.

In order to free capacity, improve agility, and enable the use of more modern technologies, ITS is finding ways to reduce maintenance costs and minimize time and effort spent improving costly independent systems. The strategies that ITS will use to drive down these costs include implementing best practices in service management, and project and portfolio management; providing improved visibility and accountability for IT investments; and implementing technologies and processes that promote standardization and reusability.

Service-Oriented Organization

ITS strives to be a service-oriented organization. The University has implemented the Information Technology Infrastructure Library (ITIL), leveraging IT Service Management (ITSM) best practices to improve the core services of the ITS organization. These best practices are bringing about improvements in support, the ability to measure satisfaction of opportunities to reduce maintenance costs, and continuous improvement.

427,066 page views/month on the ITS web site

423 ITS employees
The TEAL Classroom

In January 2013, Yale unveiled the Technology-Enabled Active-Learning (TEAL) classroom, an innovative technology-enhanced space at 17 Hillhouse Avenue designed to promote active learning, collaboration, and interaction among students and faculty.

TEAL is an instructional method developed at MIT that incorporates lecture, recitation, and hands-on experiments in one presentation. Typically, instructors deliver 20-minute lectures interspersed with discussion questions, visualizations, and pencil-and-paper exercises. Students use animated simulations designed to help them visualize concepts, and carry out experiments in groups during class. Instructors periodically ask concept questions, which students discuss and answer through an electronic polling system with handheld voting keypads. The TEAL classroom is the largest technology-enabled classroom on campus, with seating for 126 students and an instructor. Each student table features connections for sharing of laptops and mobile devices to the student’s local group or the entire class. There are five projectors and 10 LCD monitors for 360-degree visibility of instructional content. The classroom features a cart of 30 MacBook Pros for optional use, making the TEAL classroom the first Mac classroom available to all departments.

At the request of the Deputy Provost Lloyd Suttle, Academic Information Technology Solutions (AITS) led the project, which turned out to be the most complex technology and space design the ITS group had ever undertaken. The classroom has proven extremely successful with faculty and students, and has become as much a laboratory as a teaching space. ITS teams from Campus Technology Services (CTS) and AITS have been closely monitoring how students and faculty use the space, and have provided feedback for ongoing improvements. Demand for the space is expected to be great in the 2014 academic year; an upgrade and expansion of the technology options is planned in the near future.

The TEAL classroom project has been significant for several reasons, but perhaps most important is that it has catalyzed campus-wide discourse on the topic of active learning, and is driving numerous new initiatives to rethink teaching and expand options beyond the traditional lecture.

As a teacher myself, I know that technology is going to be used in the classroom whether I’m encouraging it or not. The TEAL classroom integrates technology with learning and numerous possibilities because of the many options—round tables harbor collaboration, the ability to physically plug in and share with the class keeps students engaged, clickers help teachers assess student learning as it happens.

—Randi McCray
Coordinator
Tech Support Training

The development of the TEAL Classroom stemmed from the demand from faculty for a space that favored modes of instruction other than lecturing, e.g. hands-on, problem-based learning with peers in small groups, as well as the need for greater degrees of collaborative freedom in the classroom and the ability to share with others in the room. The space offers faculty and students new opportunities to experiment with unique approaches to teaching and learning.

—Ed Kairiss
Senior Director
Academic Services
Teaching & Learning

Extending the Nursing School Classroom to the World

In Fall 2012, Yale School of Nursing launched a Doctor of Nursing Practice (DNP) program for mid-career nurses that combines the Yale residential experience with a significant amount of online coursework. In many of the DNP classes, students interact with their classmates and instructor for three weeks of each month entirely online. The Center for Media and Institutional Innovations (CMI2) team worked with Professor Margaret Moss and members of the DNP steering committee to augment the functionality of the existing learning management system, Classes*v2, to meet the communication needs of the online community. The team designed a template-driven authoring environment, based on WordPress, to ensure consistency of online course structure and graphical branding across the DNP program curriculum. To facilitate real-time communications among students, the CMI2 team integrated the Adobe Connect web conferencing solution with Classes*v2 using an extension originally developed by partners in the Sakai open-source community.

The School of Nursing had a very ambitious timeline for standing up its new DNP program, and it has been a thrill to take a disconnected set of existing ITS services and integrate them into a just-in-time solution. What we’ve learned in our inaugural year is informing our long-term strategy for building a sustainable, flexible and highly effective online/on-campus learning environment to support future innovative educational offerings.

—David Hirsch
Director, Academic IT Strategy

I’ve worked with a lot of nurses in my life so I am very happy to see them in an environment where they are learning, growing, and getting the support that they need. I view nurses as the real backbone when a family member is sick and they are true advocates for their patients — I really believe that they deserve this program.

—Lauren Kerrigan
IT Associate Director
ITSHMI Health & Medicine IT

Enhancing the Recognition of the Yale Film Study Center

Celebrating its 30th anniversary this year, the Yale Film Study Center (FSC), part of ITS, continues to grow its reputation as an organization committed to film preservation and the scholarly study and appreciation of cinema. The center maintains a collection of more than 20,000 DVDs, 600 Blu-ray discs, 6,500 VHS tapes, 600 35mm prints, and 3,600 16mm prints. Its facilities include a seminar room, screening room, private viewing booths, and three clip-capture-enabled work stations. In addition, the center co-manages two state-of-the-art film-projection facilities on campus. The FSC has organized or co-sponsored a number of film events with the Yale Art Gallery, the Yale Center for British Art, Films at the Whitney, and other organizations. Events included discussions with renowned film directors Bob Rafelson (“Five Easy Pieces”) and James Ivory (“Room With a View” and “Howards End”).

The Film Study Center has grown dramatically over the past three decades into an essential, widely used resource and one of the university’s respected and treasured institutions. As we embark on our fourth decade, we maintain our commitment to the world’s cinema heritage through our continuing efforts to build Yale’s film collection and our dedication to world-class film exhibition.

—Michael Kerbel
Director
Film Study Center

190 student employees

5
Teaching & Learning

Biology iPad Microscopy Lab

The Instructional Technology Group (ITG) collaborated with instructors Maria Moreno, Marta Wells, and Iain Dawson in the Department of Biology to design, deploy, and support the use of 20 iPads to view live images disseminated from either a Leica compound or dissecting microscope via a wireless network. This novel solution enabled collaborative in-class viewing, study, and annotation of images from classroom microscopes. The project became the first compelling use case for AirPlay (the ability for devices within a classroom to share display surfaces wirelessly) and demonstrated the need for private local networks in classrooms. It also is driving innovation for the next generation of science classroom technologies, including data management via e-lab Notebooks, and the possibility of e-book publishing in lieu of paper textbooks.

Broad Adoption of Yale Academic Commons

WordPress, a content-management and publishing platform, has been implemented for more than five years at Yale. It started as a small-scale complement to Classes*v2 course sites, and has grown into a significant institutional service in support of the University’s teaching, learning, and research. Yale’s implementation, Yale Academic Commons, provides students and faculty with a web platform for digital scholarly dissemination and discourse. Yale Academic Commons has grown from 83 course requests in 2008-09 academic year to 183 course site requests in 2012-13. Since February 2013, there have been 63 professional site requests and 21 student group site requests. Currently, there are nearly 1,300 sites (course, lab, group, and personal) on commons.yale.edu.
Research & Medicine

Improved Support for the Clinical Community at Yale–New Haven Hospital

Working with our colleagues at Yale-New Haven Hospital (YNHH) IT, Health & Medicine is leading a project to improve strategic planning and operational support for Yale clinical departments that access YNHH-based systems, such as the Epic EMR in their daily work.

The project involves the ITS Service Desk, Desktop Engineering, Desktop Support, and Network Services, and their counterpart units at YNHH. Key goals are to improve the reliability and support for Clinical users by:

- Understanding what is required of our respective network infrastructures to provide seamless yet secure access to YNHH services from Yale workstations.
- Configuring Yale Workstations to accommodate YNHH access.

ITS’s IRES Proposal Development

IRES (Integrated Research Enterprise Solution) is Yale’s integrated web-based research administration system. IRES is used to track pre-award data and help administrators involved in sponsored research manage the proposal submission and award process, including compliance requirements. This year, ITS’ Shared Solutions Group added new capabilities to the system: the ability to track sponsored projects and receive proposal submissions electronically. Sponsored project tracking was deployed to 70 percent of the University’s research community, along with an electronic system-to-system (S2S) grant proposal submission process that enabled the electronic creation and delivery of more than 500 research proposals.

The Yale School of Nursing’s Move to West Campus

The Health & Medicine IT team coordinated the efforts of ITS Audio/Visual Design in designing the audio and video conferencing infrastructure for classrooms and offices in the Yale School of Nursing’s new home at Yale’s West Campus. The School, ITS, Yale Facilities, and West Campus Administration worked closely for months to identify the School’s needs, recommend technology solutions, and fit these solutions to a limited budget. After occupancy in early August, ITS began testing and training the School’s faculty and staff on the use of the facilities. The School’s new building officially opens with a ribbon-cutting ceremony on October 4, 2013.
Careers in IT Program

ITS is committed to supporting the educational mission of the University by providing innovative technology and top-quality services. To further these goals and promote technology careers, ITS developed and launched the Careers in IT program this year.

Careers in IT promotes technology as a potential career path for high school and college students. It seeks to provide an opportunity for youth and under-represented groups to explore various careers in technology, in education and beyond, to spark interest in IT careers for these individuals, and to recruit talented individuals and future technology leaders to Yale and ITS.

Current Careers in IT programs are:

Women in IT @ Yale – Women in IT @ Yale is a shared interest group whose goal is to encourage, recruit, retain, and advance women in Information Technology roles by providing community support, education, and mentoring. The group meets quarterly.

ITS Internship Program – These 16-month paid internships for local college graduates interested in the IT field feature rotations through various ITS departments. The program allows participants to have a direct impact on technology at Yale by contributing to development and support of Yale’s IT services.

Youth in IT Web Citizenship Boot Camp – This six-week program for youths ages 14-17 focuses on responsible online behavior and an introduction to information technology careers. Students examine social media culture, shadow ITS employees working to provide a safe, secure, and inclusive web, and learn skills necessary to promote digital citizenship to their peers throughout New Haven and online.

High School Internship Program – ITS partnered with New Haven schools, Yale Human Resources, and vendors Golden Compass and KForce to create this summer internship program, intended to attract talented young people interested in information technology careers.

I've had the amazing opportunity to be part of a professional workplace and to do truly valuable work – two things not many high school students are lucky enough to experience. Within my first two weeks as part of the ITS team, I had a byline in Monday Morning News and was interacting directly with leaders within ITS. It was wonderful to feel so trusted and to really be part of the ITS organization.

—Isabel Courtelis
High School Intern
Strategic Communications
Campus Community & Beyond

Box at Yale

In January ITS launched a new collaboration service, Box at Yale, powered by Box.com, a cloud-based file sharing and storage service that can be accessed through any device: desktop, laptop, phone, or tablet.

Box at Yale makes it easier for faculty, staff, and students to upload content, organize files, share links to files, and manage file and folder permissions. They can collaborate with colleagues both inside and outside of the University anytime, anywhere, and from any device. In addition, accounts offer an ample 50 GB of document storage space and are accessed using Yale single sign-on credentials.

Within the first three months of its rollout, Box at Yale had more than 5,000 Yale users. Since its launch, the Yale community has found innumerable ways to use the service, taking advantage of a library of apps and plug-ins that give Box at Yale flexibility to adapt to the community’s broad needs.

Yale ITS is investigating the possibility of offering secure cloud storage for 3-Lock data, specifically electronic protected health information (ePHI). We are involved with no fewer than five companies to find a solution that meets compliance and security requirements. This remains a top priority for ITS.

Student Developer Program

Motivated by the strong interest among Yale students to build applications, the Student Developer Program launched in the Fall 2012. Run by ITS’ Student Technology Collaborative (STC), the program has three core goals: to teach interested students how to develop software, to hire student software developers, and to support the broader student developer community. Student developers receive ongoing training, and get paid to work on software projects related to student life, academics, and other university needs.

Yale students are exceptionally talented and eager to learn. The Student Developer program allows us to supplement their formal education through non-credit classes and the opportunity to suggest and create applications that enrich student life. The program builds a community of skilled programmers, many with non-technical degrees, who will use their skills during their time at Yale and beyond.

—Loriann Seluga
Associate Director
Student Technology Collaborative

Innovation Tools and Practices

Inspired by Yale President Peter Salovey’s goal of fostering an innovative workforce, the Solutions Design team partnered with an ITS innovation committee to implement a cloud-based tool for collecting, socializing, and refining innovative ideas. The launch was accompanied by communications aimed at making people comfortable with sharing their ideas and commenting on those of others. The initial implementation was “gamified” and awards were handed out based upon the overall efficacy and popularity of the idea.
Pilot of the Academic Hub

In partnership with the Academic Administration Client Team and the University Registrar, Solutions Design endeavored to reimagine the student experience (particularly the on-boarding experience) in terms of an environment that was totally integrated, role-based and social in nature. The pilot of this cloud hosted hub demonstrated the efficacy and opportunity of using a mature high level PaaS offering to construct a set of cohesive tools in service and support of Yale’s primary mission. A new technology development platform is a long-term commitment, and in order to ensure that Yale’s resources are being used wisely, ITS is conducting a broader platform selection project. After the platform is selected, ITS will begin to build an online environment to bring together the myriad applications and workflows necessary to everyday life at Yale, ensuring a cohesive online experience.

The Academic Hub was originally conceptualized as a place for students to fill out administrative forms online. Our team wanted to go above and beyond to create a solution that would solve for future needs in the Academic space. We tried to think big picture and create a collaborative, social space for students, faculty and staff.

—David DeMichele
Cloud Architect

The goal of the Academic Hub concept is to bring a number of disjointed, individually siloed applications into a unified space so that faculty, staff, and students can experience the richness of applications without ever leaving the front end. Previously, there was limited interconnectivity between the many interfaces so we wanted to bring them together in a way that would eliminate redundancy and overlapping functionality.

—Vijay Menta
Director, Client Team Lead
Academic Administration

Business Analyst Training Program

ITS administered a detailed skills assessment to identify potential areas of improvement for IT business analysts, the people who translate business requirements into specifications that can be mapped to technical solutions. Using that information, ITS launched a mentoring and training program for IT business analysts across campus that includes courses in business-process modeling and analysis, gap analysis, requirements prioritization, stakeholder analysis, and other relevant topics.
Foundations

Launch of Workday Transition

In June 2013, ITS kicked off the project to transition its current Human Resources, Payroll, and Financial systems from the current system, Oracle EBS, to the future system, Workday.

Workday was selected after extensive analysis and market research. The Oracle system is more than 13 years old and heavily modified to meet the diverse and unique needs of the institution. These modifications are costly to maintain and makes the product cumbersome to use. Workday is designed with higher education in mind, and will more easily support specific higher-education requirements such as fund accounting and faculty appointments. The full Workday transition is expected to take three to five years.

The initial rollout of Workday will include the delivery of human resource and payroll modules. During the same timeframe, Yale will partner with Workday on the development and subsequent delivery of the Workday finance module.

ITS and its project partners aim to achieve the following strategic objectives:

- Simplify and standardize processes
- Make it easy to get work done and harder to make mistakes
- Minimize administrative overhead for faculty and end users
- Lower operating costs and improve effectiveness
- Establish an accurate, trusted and timely reporting environment

Email Security Technology

Yale invested in an email security solution to drastically reduce the amount of spam and phish that affect the community. Implemented by Infrastructure Services and Information Security, the technology is among the best available today.

The technology was deployed at Yale in August 2012 to filter inbound mail. In October 2012, the equipment was configured to also scrub outbound mail, and in June 2013 it was configured to filter messages destined for group lists at Yale.

While occasional spam and phishing messages still make their way through, most do not, thanks to this technology. In addition, the technology provides a way to add any such messages to the filter to prevent future occurrences. Because phishing messages are the primary method of identity theft, we find that account-compromising events are down since the introduction of this solution.
Moving to the Cloud (SaaS/PaaS)

This year marked many successes for ITS in the areas of implementing cloud solutions for our clients. In addition to launching new services, the Campus Community Technologies group worked with business consultants to create a governance plan and strategy for the cloud engagement.

The lessons learned have laid the foundations for improving the way ITS approaches cloud implementations at Yale.

A few examples of successful cloud implementations:

- **NetDocs**, a document management system catering to the legal community (for the Office of General Counsel)
- **BoardBooks**, a solution catering to the creation and distribution of materials to the board of directors (for the Secretary’s Office)
- **Audienceview**, which provides advanced and flexible ticketing services and software for arenas, stadium, arts venues, and theatres worldwide and can be leveraged around campus (for the Department of Athletics)
- **Force.com Events App**, an event management application (for Yale College Reunions)

In addition, Yale hosted a first-ever cloud computing conference, the **Yale Higher Education Summit/Cloud Computing Conference**, with the theme of "Creating a Social Campus." The November 2012 event drew attendees from 13 Yale schools and departments, and 12 other higher-education institutions.

Integration Design Patterns With SaaS Cloud Providers

Working with software development professionals and a senior business analyst, the Solutions Design team identified the core design patterns for typical integration challenges when working with software-as-a-service (SaaS) providers. The focus was primarily on the Salesforce platform, but the team’s direction and priorities were informed by Yale partners outside of ITS, notably the Law School and the School of Management. In addition, the team explored and evaluated a wide range of cloud-integration products (integration platform as a service, iPaaS).
Foundations

National Science Foundation Cyberinfrastructure Grant

The National Science Foundation awarded Yale $500,000 to strengthen network infrastructure for scientific research and collaboration. ITS partnered with Yale researchers to design a new science network that connects the Yale community with external collaborators. The project increased available bandwidth tenfold, and included a buffer between the internet and an internal network to keep scientific resources secure.

In its report, the NSF review panel praised the project’s “detailed and well-defined” plan and objectives. “The strengths of the project are its support for a strong, diverse collection of specific science and application examples, and a real focus on making resources available to external users,” the panel wrote. “This combination should assure that the project has both broad and deep impact.”

David Galassi, Director of ITS Network Services, worked on the grant with Dr. Andrew Sherman of Yale’s Department of Computer Science. Paul Gluhosky, Manager, Academic Projects, facilitated the requirements gathering with the researchers and took part in the interview sessions. Marcus Aden, former Business Strategy Analyst, wrote the grant proposal, along with a number of other ITS technology experts.

This project has been a great way for ITS to engage with the academics on campus. We have been able to do some leading-edge and novel work in the networking space. I’m especially proud of the noted ‘strong scientist/IT collaborations on network and DMZ design and implementation,’ as well as the recognition of some of our leading edge work, including IPv6 adoption.

—David Galassi
Director
ITS Network Services

DARCY Implementation

Donor and Alumni Relations Constituents at Yale, known as DARCY, is the University’s implementation of the Blackbaud enterprise contact-relationship management system. The DARCY system manages Yale’s donor and alumni data for development and alumni-relations activities across campus.

Launched one year ago, DARCY is a vast improvement over the previous system in both data richness and application sophistication. The increased data complexity allows much deeper data integration for day-to-day operations, as well as providing a better understanding of potential donors and their relationship to Yale.

Enhancements to DARCY in the coming years include a data warehouse in FY14 that will help facilitate better ad hoc query capability and lay the groundwork for dashboard capability. In FY 15, upgrades are planned that will enhance DARCY’s web presence and will allow access via mobile devices to help fundraisers while they travel.

The DARCY project represents a significant foundational effort that not only will support fundraising efforts now, but will be extensible to new ways of fundraising in the future.

—Paul DiBello
Client Team Lead
Development & Association of Yale Alumni
Foundations

ITS Support Improvements

Over the course of FY13, the ITS Support Center (Help Desk) reduced its “average speed to answer” by 70 percent, and reduced its call-abandonment rate by 60 percent. These improvements mean the Help Desk is able to assist a greater number of clients with their computer-support needs, and that clients spend less time waiting to speak to a technician and more time performing their daily tasks. Faculty and Staff Support raised its ability to resolve incidents within Service Level Agreements from 87 percent to 99 percent. In doing so, the average time to resolve an incident was reduced from more than 9 days to less than 1.5 days.

Mobile Device Management

To support the growing demand of departments throughout the University who use mobile devices (including iPods, iPads, and smartphones), the Endpoint Engineering team launched the Mobile Device Management (MDM) service. This service provides departments the opportunity to create access to information through mobile device, and aligns with the University’s goal of adopting sustainable workplace practices. Those who have used MDM were pleased with the access to real-time work-order assignments and other information, and with the ability to go paperless.

Identity and Access Management

Following a major assessment of its Identity Management systems, ITS has created a new Identity and Access Management group to manage the creation of new Identity services. The objective is to enable business and system development through the deployment of rigorous and reliable identity systems that streamline access and privileges for users. Having created a governance structure that includes schools and departments across the University, the group is moving forward with implementation of a new directory service and a new provisioning service.

Network Security Technology

Yale has invested in a next-generation perimeter firewall to protect the community from a wide array of cyber attacks, viruses, malware, and spyware. The firewall also serves as a conduit for internal computers to reach the Internet safely. Information Security and Infrastructure Services jointly evaluated a number of vendor solutions and chose the equipment that provided the best performance and security. The project included the introduction of an external security services provider to monitor and configure the firewall on a 24-hour basis.
Disaster Preparedness and Resilient IT

In close partnership with Yale’s offices of Enterprise Risk Management and Emergency Operations, ITS has made significant progress in improving our ability to respond to an emergency such as the loss of a data center. ITS has invested in software and hardware to improve the resiliency of technologies and systems critical to University operations. Planned improvements will continue into FY14 as we coordinate disaster-recovery testing and continue to improve our disaster recovery plan.

Keeping Desktops Current and Secure

During FY13, Endpoint Engineering in collaboration with Quality Assurance worked to upgrade the desktop environment to more modern versions of key software. By doing so, these upgrades provided for a more secure and modern client experience. The software that was upgraded included Internet Explorer 8, Acrobat Professional 10, Java 1.7, and Firefox 16.

Savings Through Financial Management

In partnership with Yale Procurement and ITS Vendor Management, ITS Network Services was able to negotiate $500,000 in cost reductions for Yale cellular contracts. These savings were passed on directly to plan holders. ITS also managed a Distributed Antenna System project to bring improved cellular coverage to 79 buildings on campus at no cost to Yale. In addition to reducing rates for cell phone calling plans, ITS reduced rates for virtual servers, research storage, and system administration.

Oracle R12 Upgrade

In May 2013, ITS successfully completed an upgrade of its Human Resources, Payroll, and Financial systems. This required a major change in the vendor’s product and required a high degree of testing and remediation to ensure that the upgraded system worked properly within the wide range of internal and external systems with which it exchanges data. The upgrade allows ITS to continue to receive critical security, legal, and regulatory updates from the vendor.

Yale Budgeting Tool Installed

Over the course of FY13, ITS partnered with the Budget Office and University Controller to identify and install an advanced tool to help support the University’s yearly budgeting process. This tool will simplify the yearly budgeting process by prepopulating data fields and removing the dependence on multiple, disconnected departmental spreadsheets.

Foundations
Governance Structure

Over the past year, ITS developed a governance structure to enable communication and transparency and bring members of our community together to guide our strategy and decisions. These committees include active participation and committee membership from all corners of the campus community including faculty, staff, students, and alumni.

By end of FY13, the following committees were in place: ITS Advisory (ITSAC), Business Systems, Development & AYA, Information Security & Policy, ITS Research Technologies, Technology Initiatives (TIC), Technology Operating (TOC), and Technology Architecture (TAC).

ITS’s first priority over the past year has been standing up the committees to guide investment for the annual capital portfolio. The committees are also responsible for the assessment of input from the Yale community through analysis of feedback and metrics. The Strategic Technology Committees base their decision-making on community needs, legal and compliance requirements, financial constraints, and alignment with the University’s mission and strategy, and they will help to set priorities around the implementation of the plan and will guide future changes to the plan.

Yale Strategic Technology Committees

- University Officers and Deans
- CIO and IT Leadership
- IT Advisory Board (External Committee)
- University and External Committees
- Yale Strategic Technology Committees
- Special Interest/Program Committees
- IT Portfolio Management

- Business Systems (Staff and Administration)
- Academic Administrative Technologies (Staff and Administration)
- Institutional Technologies (Faculty, Students, and Staff)
- Teaching & Learning (Faculty, Students, and Staff)
- Development & AYA Technologies (Staff and Administration)
- Clinical Research Technologies (Faculty and Researchers)
- Information Security & Policy (Faculty, Staff, and Administration)
- ITS Research Technologies (Faculty and Researchers)
- Technology Operations Committee (TOC) (Campus Technology Leaders)
- Technology Architecture Committee (TAC) (Campus Technology Architects)
- ITS Advisory Committee (ITSAC) (Provostial Committee)

Planned, but not yet formed

- Yale Strategic Technology Committees
- University Officers and Deans
- CIO and IT Leadership
- IT Advisory Board (External Committee)
- University and External Committees
- Yale Strategic Technology Committees
- Special Interest/Program Committees
- IT Portfolio Management

- Business Systems (Staff and Administration)
- Academic Administrative Technologies (Staff and Administration)
- Institutional Technologies (Faculty, Students, and Staff)
- Teaching & Learning (Faculty, Students, and Staff)
- Development & AYA Technologies (Staff and Administration)
- Clinical Research Technologies (Faculty and Researchers)
- Information Security & Policy (Faculty, Staff, and Administration)
- ITS Research Technologies (Faculty and Researchers)
- Technology Operations Committee (TOC) (Campus Technology Leaders)
- Technology Architecture Committee (TAC) (Campus Technology Architects)
- ITS Advisory Committee (ITSAC) (Provostial Committee)

Planned, but not yet formed
Information Technology Strategic Plan

Technologists, faculty, staff, and students across the University recently participated in the development of a comprehensive information technology strategic plan that furthers the University’s mission to create, preserve, and disseminate knowledge, and to attract and retain the best and brightest students, faculty, and researchers. ITS will implement this plan through the use of a governance model that facilitates decision-making, and by implementing a dynamic and inclusive planning process with regular opportunities for feedback and communication.

This strategic alignment benefits the University through a shared understanding of where ITS wants to go and how it plans to get there; the ability to make better-informed choices; an improved ability to plan for future changes, such as regulatory and environmental changes, and clearer accountability for achieving goals that support the strategy and mission.

More than 200 faculty members, staff, and students participated in the development of the recommended strategies contained in the plan; ITS will continue to collaborate with the community on prioritization. ITS formed 19 technology working groups to develop strategies in specific focus areas; these groups identified several common objectives that illuminate the areas where Yale should focus energy. They include:

- Improved collaboration, communication, and elucidation of the services available
- Improved data access and data integration among systems
- Data governance and stewardship
- The ability to innovate, accelerate, and deliver solutions with agility
- The need to maintain a secure, robust, and compliant environment

The technology landscape around us continues to evolve rapidly, offering ever-improving user experiences, ubiquitous access, and ever-available cloud-based tools. Our community is already using these services and expects the same of our services. While IT aspires to provide a modern and user-friendly experience, we are limited by our current technology landscape, which comprises many large, complex, and highly independent systems. These systems use a plethora of standards, frameworks, and architectures, held together with point-to-point integrations.

Information Technology is increasingly woven into the fabric of how we teach, learn, build communities, and communicate. ITS continues to see growing demand for IT projects and services, in part due to better processes for documenting the demand from the Yale community, and in part due to growing expectations driven by changes in the technology landscape. Total demand for IT projects increased from $57 million in FY13 to $83 million in FY14, and we forecast that demand will remain at this level through FY16.

Yale is also nearing the end of life for many of the large IT investments that were made in the past. Large lifecycle replacement needs will consume the majority of the annual project portfolio budget and limit ITS’s ability to respond to the broader needs identified in this plan, unless ITS is able to increase our investments in IT for the next several years and free up some of the resources that are providing operational support.

The IT Strategic Plan is an important tool for making decisions about where to invest limited resources in order to help the University achieve its mission and goals. The plan is aspirational and will likely be constrained by economic pressures, but its value is that it provides the Yale community with greater visibility to what we will collectively strive to achieve in the next several years.

—Faith Brown
Director, Strategy & Portfolio Management
Nearly 94 percent of centralized IT resources and operating budget are required to provide routine services to the community and to maintain the complex and diverse systems that we support today. ITS needs to increase operational capacity to work on new projects and technologies by:

- Determining the end-to-end costs of existing IT services,
- Driving down operating costs,
- Minimizing time and effort spent improving costly independent systems, and
- Delivering technology services that are cost-effective and efficient on an ongoing basis.

Strategic Planning Team

Left to right, back row: Phil Rinehart, Jane Livingston, Ed Kairiss, Michel Dula
Front row: Faith Brown, Marc Ulan, Colleen Whelan, Dan Powell, Adriene Radcliffe, Bob Condon, Susan West
IT Challenges

Less than 10% of our annual budget is available for new projects. In addition, a significant accumulation of compliance and maintenance work must take priority over new initiatives.

Application Costs

On top of this backlog, the development of new applications comes with ever-increasing costs. Enhancement, maintenance, and operational expenses over an application’s lifetime typically result in a total expenditure many times the initial outlay.

Foundational System Needs

The Yale technology landscape varies with disconnected systems that require duplicate data entry, lack of standard community reporting or collaboration offerings, and some areas still reliant on a multitude of paper forms.

The timing of the need to replace foundational legacy systems merge over these next few years putting a majority claim on the minimal project budget. Such projects include Infrastructure as a Service (IaaS), Identity and Access Management (IAM), implementation of cloud software Workday as a replacement for Yale’s current Human Resources and Finance systems, Service-Oriented Architecture (SOA), Data Management, Development Reporting, an Academic Hub, and a new web system, among others. These necessary improvements will provide the foundation to deliver new technology in the future.

The Unknown

With more than 25,000 faculty, staff and students, 14 Schools, and 146 programs, the breadth of Yale University makes it difficult to fully understand the needs and priorities of the institution. Over the course of the last year, we implemented a new collaboration and governance framework. This framework encourages engagement with the Yale community in the conversations surrounding future technology needs at Yale (see Governance p. 16).
Incremental Services

**NEW**

**Teaching & Learning**
- TEAL Learning Space (see p. 4)
- Center for Science and Social Science Information (CSSSI) Space
- Adobe Creative Suite annual subscription savings
- Research Storage Solution

**Research & Medicine**
- Research Storage Solution
- e-Lab Notebook

**Campus Community & Beyond**
- Box@Yale (see “Box at Yale” p. 9)
- Google+ (including Google Groups Mailing Lists)
- Apple Airprint/Airplay
- ITS Service Management

**Foundations**
- Email Security (Spam filtering service)
- Perimeter Firewall
- Managed Security Services
- NetMRI Proactive Network Management
- Data Storage Management
- Configuration Management
- Sprout Virtual Server
- Private Cloud Virtual Machines
- Aruba Remote Networking
- Mobile Device Management
- Walk-in Computing Support at 25 Science Park and 135 College Street
- Introduced Student Developer Program
- Red Hat Operating System Licenses

**Strategy & Governance**
- Technology Strategic Plan

**IMPROVED**

**Teaching & Learning**
- Expanded HPC nodes and storage
- Enhanced mail capabilities in Classes*v2
- Math placement tests in Classes*v2

**Research & Medicine**
- Malpractice System Replacement
- YNHH Support for Clinical Community (see p. 7)

**Campus Community & Beyond**
- Oracle R12 Upgrade
- Student Grants Database Replacement
- NetDocs – OGC Repository
- Athletic tickets
Jeff Goddu

Jeff Goddu has been working at Yale for almost five years as an IT Support Specialist. In June 2013, Jeff was one of the first people to be inducted into the CIO Spot Award Hall of Fame. Yale ITS’s High School Intern Isabel Courte-lis caught up with Jeff.

I: On a daily basis, what does your job entail?
J: Providing computer support, setting up new hardware, training users, and acting as a liaison between the client and ITS for other needs.

I: What has been your proudest on-the-job moment?
J: I don’t know if there’s one specific moment. I just like helping people. Solving problems in general is probably what makes me most proud.

I: How does your job support the mission of the University?
J: I enable researchers and staff to do their work efficiently with minimal interruption. I keep people and computers happy.

I: If you could innovate anything, what would it be?
J: Innovate anything….hmm…that’s a tough question. I don’t know, probably something with space travel. Figuring out a way to live on other planets, stuff like that. It sounds crazy! I think what Virgin Galactic and some of the X Prize competitions are doing is really interesting.

I: Where do you see the future of technology? Where is it headed?
J: Mobility. We’re seeing that already. With Google Glass and other less obtrusive technologies coming out, someday in the future maybe no one will have these big computers, everyone will be working with much smaller integrated devices.

FY13 CIO Spot Award Winners

Kazi Ahmed, Senior Software Engineer
David Backeberg, Senior Operating Systems Programmer
Phil Barello, Applications Support Specialist
Chris Burkhalter, IT Support Specialist
Jeff Campbell, Manager, Technical Analysis
Michael Cicarella, Senior Operating System Programmer
Matthew Cotter, IT Support Specialist
Maryann D’Albergo, Business Analyst
Mike Dinice, Application Support Specialist
Kathryn Dobbins, Database Administrator
Vanessa Formica, IT Support Specialist
Andre Gauthier, Manager, High Performance Computing Systems
Jeffrey Goddu, IT Support Specialist
John Graves, Manager, Learning Environments
Jessica Greer, Senior Systems Administrator
Dave Griesbach, Senior Software Engineer
David Hirsch, Director, Academic IT Strategy
Chris Hunter, High Performance Computing Systems Engineer
Lauren Kerrigan, Associate Director, Health & Medicine IT
Amy Lohman, Business Systems Analyst
Robert Mazzola, IT Support Specialist
Randi McCray, Coordinator of Technical Support Training
James McKay, Business Analyst
Thomas Minior, Supervisor, Help Desk
Duncan Moore, Classroom Technology & Media Specialist
Richard Morris, Application Support Specialist
John Pagliuca, Director, Desktop Support
Pam Patterson, Academic Technologist, Academic Services
Paul Perry, Classroom Technology & Media Specialist
Amit Poddar, Senior Database Administrator
Lou Rinaldi, Software Engineer
Mike Rinaldi, IT Support Specialist
Scott Rumage, Supervisor, School of Forestry & Environmental Studies
Nick Silkey, Senior UNIX Systems Engineer
Walter Szpakowski, Client Support Specialist
Dave Swanson, Database Administrator
Mela Toro, IT Support Specialist
Charles Wright, High Performance Computing Systems Engineer