Information Services and Technology

The success of Information Services and Technology (IS&T) continues to rely on its ability to support MIT's core mission—to advance knowledge and educate students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century. Working in partnership with the Institute's faculty, students, and staff, IS&T provides foundational information technology (IT) services that make it easy for the MIT community to do its work: communicate, collaborate, and interact with MIT and beyond.

IS&T's charge, as stated by the executive vice president, is to provide services worthy of MIT. To accomplish this in FY2010, IS&T focused on delivering robust core services to the community based on available technologies and strategic positioning to allow for superior service at a reduced cost to the Institute.

Key responsibilities include:

- Providing efficient and cost-effective IT utility (network services, data centers, software infrastructure) to the MIT community

- Partnering with educational and administrative units to develop processes and solutions that improve service and decision making while lowering cost

- Maintaining receptivity to leading-edge IT knowledge embedded in MIT's academic community and leverage it where appropriate

Working within the complexities of services at MIT, IS&T aims to:

- Improve functionality and interoperability of MIT's administrative systems environment

- Develop a practical next-generation approach for MIT's operating system for the educational enterprise (the "student system")

- Work with academic leadership on identifying appropriate research computing capabilities

- Build a strong, focused IS&T organization capable of meeting evolving campus needs in an environment of tight resources

IS&T also went through a change in leadership as the former vice president, Dr. Jerrold M. Grochow, resigned after four years in the position. In September 2009, Marilyn T. Smith was hired as the new head of IS&T.

Highlights

With the financial crisis still upon us, IS&T worked over the past year to reduce its FY2011 gross expense budget by 7% to reach our two-year target of 15% (8% was taken in FY2010).

Key accomplishments for IS&T in FY2010 include:

- Data center migrations

- Email and calendaring rollout

- IT governance

- Mobile computing application development

- Network infrastructure and wireless system improvements

- Next-generation student systems planning

- Partnering on systems for a "digital MIT"

- Planning for implementation of Institute-wide Planning Task Force recommendations

Data Center Migrations

IS&T completed the migration of the enterprise-wide applications to OC11 (an off-campus data center in Boston). This was a significant accomplishment in MIT's data center strategy that allowed us to provide power and network redundancy in the enterprise computing environment. At the same time, IS&T increased uninterruptible power supply (UPS) power in the W91 data center by 110 kW, benefiting our co-location customers and on-campus research computing. We also virtualized about 80% of our servers, resulting in the availability of about eight racks of physical space and an additional 20 kW of power for future growth. This new virtualized environment provides stability, flexibility, and scalability for systems and applications while lowering the cost of incremental resources for deployment and maintenance.

We have improved our automated tape library backup system to enable faster and more efficient backup and recovery, and provided additional tape storage capacity (potential of up to 70 petabyte) and enhanced redundancy. IS&T also upgraded its backup data center in E40 to enable the same service levels.

MIT's financial and human resource administration systems (SAP) were moved from the W91 data center to OC11. As part of that migration, IS&T virtualized the system and upgraded the hardware from Sun SPARC to Dell and the operating system from Sun Solaris to open Linux. The storage area network was upgraded and the database was migrated to Unicode to enable multi-language character storage and compatibility with SAP upgrades. By choosing to make Tivoli Storage Management (TSM) the Institute's standardized data backup system, MIT realized savings on licensing fees by eliminating the use of multiple backup systems.

IS&T retired the Property Database, the final remaining mainframe application.

Email and Calendaring Rollout

The Exchange Migration project created over 11,000 Exchange accounts at MIT this past year. Since the beginning of the year, TechTime calendar accounts have been reduced from 13,000 to 640. Effective January 2010, all new accounts for incoming faculty, staff, and students defaulted to Exchange. Outreach efforts included an October Community Forum, November meetings with the assistant deans, and December meetings with the Administrative Advisory Council II and administrative officers. Some of the larger migrations that occurred over the last year included the MIT Alumni Association, Office of the Vice President for Finance (VPF), Dean of Undergraduate Education, the executive offices, the MIT Press, MIT Libraries, Human Resources (HR), the Office of Resource Development, and the Departments of Chemical Engineering and Biology.

On-site migration assistance will continue through summer 2010 with a move to a self-service model starting in the fall. Preparation included developing an Exchange support matrix to assist Help Desk consultants in handling Exchange-related questions, coordinating with Microsoft technical support representatives to better understand how to make the most effective use of our Exchange environment, and unveiling new wizards (e.g., email configuration and Exchange calendaring) to help individuals find relevant information quickly.

IT Governance

The IT@MIT Working Group of the Institute-wide Planning Task Force identified a number of issues for focus, one of which was to create clear processes for decision making. To address these issues, provost L. Rafael Reif and Theresa M. Stone, executive vice president and treasurer, chartered a small, focused Information Technology Governance Committee.

The Information Technology Governance Committee is a decision-making body that reports directly to the provost and executive vice president and treasurer. Committee members include:

> Professor Martin Schmidt, associate provost (co-chair)
>
> Marilyn T. Smith, head of IS&T (co-chair)
>
> Professor M. Frans Kaashoek, associate director of Computer Science and Artificial Intelligence Laboratory (technology domain expert)
>
> Professor Claude Canizares, vice president for research and associate provost (research representative)
>
> Armand Doucette, executive director of information technology, Sloan School of Management (non-IS&T IT representative)
>
> Professor Daniel Hastings, dean for undergraduate education (education representative)
>
> Israel Ruiz, vice president for finance (administration representative)

These colleagues will work together to help drive development of an IS&T strategy for MIT, manage the IS&T investment portfolio, and charter and manage committees and working groups. The first meeting of the committee is scheduled for August 2010.

Mobile Computing Application Development

In February 2010, IS&T released MIT Mobile for the iPhone, our first native iPhone application, or "app," for the MIT community. This app was developed in close collaboration with the MIT News Office. Version 1.0 featured Institute news from the MIT News Office, a live campus shuttle tracker, a campus map, people directory, access to the Stellar course management system, and the ability to push emergency alerts to users. Version 2.0, released in June 2010, included an MIT events calendar and many other improvements to the app's interface and performance. Since it became available in the Apple iTunes Store, the MIT Mobile iPhone app has been very well received with a four-star rating and over 13,000 downloads by people in over 60 countries.

Network Infrastructure and Wireless System Improvements

The explosive growth in the use of devices such as iPhones, Blackberries, and laptops requires considerably more robust and pervasive wireless network connectivity. At the same time, the network infrastructure must be managed to support the extensive wireless network, maintain almost 3,500 wireless access points, and coordinate with new building construction needs.

IS&T completed numerous network projects, including the following:

- Installation of new networks (wireless and wired) for E62 (new Sloan building), E14 (new Media Lab building), and 76 (new Koch Institute for Integrative Cancer Research building)

- Providing connectivity and building out the Bates Linear Accelerator Center's optical network to support high-performance computing at the Bates high-performance research computing facility

- Upgrading the building networks for E25 (MIT Division of Health Sciences and Technology) and W11 (Religious Activities Center); working toward completion of network upgrades in Buildings 2, 4, and E15; and planning for network upgrades in Buildings 10, 24, N51, N52, E34, E38, and E53

- Extending the MITnet fiber network to W98 (Resource Development, Alumni Association), upgrading them from 100Mb Verizon TLS service to 1Gb MITnet service

- Establishing high-speed network connectivity to major research networks including the Energy Sciences Network, the Large Hadron Collider network, National LambdaRail, Manhattan Landing, and Internet2 to enable MIT's world-class physicists to stay at the forefront of their research

- Migration of 82% of 3,490 campus wireless access points and 100% of campus housing to the new wireless infrastructure (802.11n), thus providing higher bandwidth (from ~54 Mb/s to up to 300 Mb/s), seamless roaming across

the campus, a higher degree of reliability through centralized controller management, and an overall increase in wireless coverage through improved radios and management

- Improving cellular coverage on campus through the installation of an outdoor AT&T cellular transmitter on Building 16 and two Sprint/Nextel transmitters on E19 and W34. This installation was completed prior to the June 2010 Commencement so that guests could take advantage of improved service

Next-Generation Student Systems Planning

Effective June 30, 2010, MIT withdrew from the Kuali Student Consortium. This decision followed an extensive internal review and discussion period, as well as consultation with Kuali student board members. In conjunction with this, IS&T and a group of key stakeholders decided to take a more focused and strategic approach that will evolve our existing student systems by adding critical business functionality, enhancing the user experience for faculty, students, and staff, and stabilizing the technical infrastructure.

In recent years, the Office of the Dean for Undergraduate Education (DUE), the Office of the Dean for Graduate Education (ODGE), the Division of Student Life (DSL), and IS&T cosponsored projects to analyze MIT's student information systems, determine their viability for the future, and research options for enhancement and/or replacement. The VISION Study and the Next-Generation Student Services Systems projects were conducted with stakeholders and users of these systems from both business and technical perspectives. Based on the studies' findings, we concluded that the best strategy was to incrementally implement high-impact, customer-facing functionality rather than replace the entire system. In conjunction we will work toward technical stabilization of our Student Information System (SIS) to assure its long-term sustainability.

Because the SIS system is a core component in fulfilling MIT's mission, Eamon Kearns, associate director of education systems in IS&T, and Mary Callahan, registrar in DUE, have been charged with developing a strategy for SIS Next Generation. Working with other stakeholders they will create a roadmap that will identify priorities against which projects will be measured and will coordinate the prioritization of needs in a three-to-five-year plan.

Partnering on Systems for a "Digital MIT"

The Administrative Systems area within Student and Administrative Information Systems (SAIS), in partnership with the VPF, HR, and representatives from the MIT community, delivered a number of new systems that have begun to turn "Digital MIT" into a reality.

Electronic Request for Payment (RFP) dramatically improved the process and turnaround time for RFPs. The new easy-to-use online RFP interface includes automatic routing to Accounts Payable and the Office of Sponsored Programs for approvals, and functions seamlessly with SAP. It includes logic to assure that submissions include all the

necessary information and that they are consistent with MIT policies. Reimbursements are deposited directly into bank accounts for individuals who have direct deposit information on file. The simplified process will automate 50,000 annual payments.

ePaystubs provides faculty, staff, and students with easy online access to current and past paystubs. It also eliminated the printing and distribution of 396,000 paper paystubs annually.

The Appointment Process Redesign project transformed the way MIT manages HR/Payroll transactions for faculty and staff, automating nearly all of the processing associated with the more than 17,000 paper-based forms processed manually each year. Transactions for terminations, supplements, leaves, and changes were delivered to a pilot group of 24 departments representing all five schools and some central functions. The final transaction—new hires—will be delivered early in FY2011.

Travel Modernization has enhanced services to assist MIT travelers with trip planning, payment for expenses, post-trip expense reporting, and reimbursement for out-of-pocket expenses by building interfaces between a third-party leader in travel solutions, Concur, and MIT's administrative systems.

Task Force Recommendations Planning

In December 2009, the MIT Institute-wide Planning Task Force issued its final report. In March, we began to move from ideas to actions. The task force recommended that a number of opportunities identified by the working groups be assigned to individual units and existing committees for further evaluation and to determine next steps. Several of these ideas were already being explored by units across MIT, and some, such as addressing expenditures for Athena clusters and printing, are in the early stages of implementation and will impact FY2011.

IS&T completed an internal review of the task force ideas assigned to it from the recommendations of several working groups. The goal was to determine viability, implementation priorities for FY2011 and beyond, to assign ownership, and to define expected results. Some of the recommended work has been completed and the rest is under way or part of our operational plan. Recommendations include:

- Centralize purchasing and management of computer hardware and software
- Decustomize administrative and educational enterprise systems
- Remove "pain points" in using MIT enterprise systems
- Outsource voice and video communication
- End support for selected IT products and services
- Streamline Help Desk support and outsource as appropriate

Other task force ideas assigned to other units will also require significant work from IS&T.

Summary of Financials for FY2010

IS&T's gross expense budget for FY2010 totaled $64.5 million. IS&T worked carefully this fiscal year to reduce expenses given the Institute's financial directives, and was able to end the year with gross expense spending of $59.6 million ($4.9 million, or 8%, under the gross expense budget). IS&T provides its IT services through various funding models which include the general Institute budget, software development, revenue recovery, and service centers.

The general Institute budget for IS&T in FY2010 was $31.8 million, of which $30.1 million was spent, creating a favorable variance of $1.7 million. The main driver of this variance can be attributed to a large number of positions that were or became open in FY2010, as well as a significant shift in the amount of time people worked on software development–funded projects.

In FY2010, IS&T used $7.1 million of the annual $9.5 million funding pool for software development projects. Approximately 46% was spent to develop student systems, including the Next Generation Student System; Online Subject Evaluation/Who's Teaching What; Humanities, Arts, and Social Sciences (HASS) Requirements; and Online Grading. An additional 30% was spent to support software development projects for administrative systems, including the Appointment Process Redesign, Enterprise Leaning, SAPweb Request for Payment and Direct Deposit, and Travel Modernization projects. The remaining $1.7 million was used for software infrastructure projects, including the release of Stellar 2.2, the MIT Mobile app, the reporting and forecasting Tool, the Touchstone web authentication service, and managed data services for abandoned properties.

Approximately 38% of IS&T activity is funded from services which are billed to departments for telephone and network services, server management and collocation services, and other rate-recovered services such as desktop support, software distribution, and departmental website and database consulting and development. In FY2010, funding from these sources was $1.7 million higher than budgeted.

The Telephone and Network Service Center (TNSC) had actual expenses of $1.3 million in FY2010 compared to a budget of $1.1 million. This unfavorable variance was due to higher-than-budgeted operational expense settlements. Investment in new capital assets totaled $9.8 million or $3.6 million less than the FY2010 capital budget of $13.4 million. TNSC operating and capital expenditures provide funding for telephone and network infrastructure maintenance and upgrades including all building network upgrades, telephone and data communications room renovations, MITnet wireless and Voice over Internet Protocol (VoIP) rollouts, and data center expansion and upgrades.

The Server Operations Service Center (SOSC) finished the year with an operating surplus of $133,000 due to increased demand for server operations services. Capital investment expenses in the SOSC for FY2010 totaled $950,000 and consisted of server equipment and storage area network (SAN) storage.

New/Expanded Services

IS&T is a dynamic environment. We are constantly adding new services to our portfolio. Over the past several years, IS&T has expanded its offerings to respond to increasing demands for new IT services across MIT:

- Appointment process redesign
- CertAid 2.0 application (manages the entire certificate setup procedure for Safari browsers)
- Debathena
- Electronic diploma production
- Electronic request for payment
- ePaystubs (electronic paystubs)
- Kerberos 1.8
- Managed data services for abandoned property, Institutional Research honors and awards, and Office of Minority Education student transcripts
- Mathematica software made available via download rather than distributed on physical media
- Microsoft Exchange (continued rollout across campus)
- MIT iPhone application versions 1.0 and 2.0
- MIT Mobile Web 2.0
- MIT Student Information System (MITSIS) application server improvements
- MIT Wiki upgrade to Confluence 3.0
- Implementation of OC11 (off-campus data center) infrastructure
- PGP Whole Disk Encryption for laptops
- Reporting and Forecasting Tool 1.0
- SAP environment renewal
- Session Initiation Protocol (SIP) trunking implemented (through your MIT identity [*username@mit.edu*], enables connection of Internet-based devices such as laptops, SIP video phones, and WiFi and other mobile phones for real-time voice and video communications)
- Support for Mac OS X 10.6
- Support for Windows 7
- SSL Virtual Private Network (VPN) (new web-based service that allows for improved connectivity from off-campus)
- Distribution of MATLAB for students
- Modernization of travel administrative systems

Decommissioned/Eliminated Projects, Services, and Systems

As the IS&T organization evolves to meet the needs of the community, we work to decommission select services and/or eliminate projects where appropriate. Below are the projects, services, and systems that were decommissioned or eliminated in FY2010:

- CampusLink—no new accounts created, phasing out existing accounts (contract with third-party vendor to provide long-distance telephone service for students)

- iPass, a service that allows travelers to remotely connect to the Internet from anywhere using a local Internet provider

- Kuali Student—MIT withdrew from this part of the Kuali Consortium

- perMIT—project cancelled

- MIT TechTime calendaring service—ended support

- PalmOS—ended support for this type of mobile platform, including devices such as Palm T/X, Treo 650p, 700p, 755p, and the Palm Centro

- Property Database—retired the final remaining mainframe application

FY2011 Planning

In November 2009, IS&T began working on a strategic and operational plan. The initial phase of the planning focused on gathering data to build a new foundation to support the future of IS&T and the services we provide.

Our goals and approach included focusing on improving customer relationships and service delivery. Our process for data gathering involved various methods designed to support transparency, teamwork, and inclusion. These included:

- Listening and learning—conversations with employees, customers, and other stakeholder groups

- Pulse groups—engaged a randomly selected group of IS&T staff to indentify what's working and what's not, to brainstorm improvements, and to answer lingering questions about IS&T and the future

- World of the customer—engaged customers to better understand their business needs and "pain points," as well as how IS&T can support them in their work

- Findings review—engaged the IS&T Leadership Working Group to review previously completed studies/reviews (including the IT@MIT Working Group Report) and identify high-value recommendations and findings

Integrating the feedback from all of these sources, we worked to develop a strategic plan for IS&T that included values, a mission, a five-year vision, and six strategic priorities. Our goal is to complete the IS&T 2011 Operational Plan and review it with the new IT Governance Committee by the end of September.

IS&T Organization and 2010 Accomplishments by Area

In FY2010, the IS&T organization consisted of these operational areas:

- Client Support Services (CSS): IS&T's "face to the customer" included the Help Desk, IT Security Support, Departmental Support Services, and Faculty and Student Support

- Infrastructure Software Development and Architecture (ISDA): included Data and Reporting Services, Developer Support and Platform Services, Content and Collaboration Services (including Stellar), and the Kerberos Consortium

- Operations and Infrastructure Services (OIS): included Telephony, Networks and Network-based Applications (e.g., MITnet, email, calendar, and MITvoip), Data Centers, Database Administration, Storage, and Backup and Recovery

- Student and Administrative Information Services (SAIS): included Financial Administration Systems (SAP), Student Systems, Next Generation Student Systems, and Environmental Health and Safety Systems

- Headquarters (HQ): supporting the four operational areas, HQ included communications, project management, human resources, finance, and administration

In addition to the accomplishments highlighted in this report, accomplishments by operational area are detailed below.

Client Support Services

Making tools easier to use and improving overall customer service was a focus of Client Support Services in 2010. This was accomplished through a variety of activities.

CSS, the MIT Libraries, the Office of Educational Innovation and Technology, and OCW successfully collaborated on Orientation 2010 to welcome the Class of 2013. New experiments such as the satellite help desk on the main campus during the week preceding registration day and the Computing@MIT Map, which consolidated orientation information into a business card–size folded map, were well received. During the January Independent Activities Period (IAP), IS&T hosted the adaptive technology open house, at which we demonstrated technologies for persons with disabilities to 35 attendees who represented 10 departments. In spring 2010, our Service Desk and Faculty and Student Experience team had a strong presence at Campus Preview Weekend.

Mathematica software was set up to be distributed via download rather than from media.

MATLAB was made available directly from the MathWorks download system for students, eliminating the need for customized installers.

Microsoft Office products were made available at no cost to faculty and staff through a collaborative negotiation between CSS, Operations and Infrastructure, GovConnection, and Procurement.

Training and documentation supporting Windows 7 and Microsoft Office releases were developed and delivered.

Certificate support was simplified with improved documentation and publicly signed site certificates on heavily used services such as SAPweb. This included an improved CertAid tool, an improved certificates acquisition page, a usability review (which highlighted the complexity for end users), and assistance in designing a new interface and improved functionality.

The student loaner laptop program streamlined the setup, recovery, and reissue of laptops, resulting in the need for fewer resources to provide a successful program. Faculty and student responded positively to the changes.

IT security training co-led by the IT Security Support team offered several IAP and department-level courses on handling sensitive data and made presentations at HR's Essentials of Management course (on the current state of IT security at MIT) and at the Northeast Regional Computing Program (on evolving collaborative strategies for data incident response).

IT security consulting assisted a number of departments, labs, and centers (DLCs) with problems related to hacking, security, and MIT guidelines on websites and FileMaker databases created by external vendors outside of the IS&T development process.

The latest version of PGP Whole Disk Encryption software was evaluated and rolled out, which was key for Mac OS upgrades to 10.6 (Snow Leopard).

The Dell Custom Factory Integration program was finalized, allowing Dell to supply MIT with computers preloaded with MIT-imaged software and asset tags.

The Desktop Deployment and Maintenance Realignment program was completed and rolled out to customers this past spring.

Three asset recovery pilots were completed with various vendors. IS&T currently is working on implementing an asset recovery program for computers deployed through the desktop renewal program.

Debathena (formerly Athena 10) was deployed—comprising a fundamental reengineering of many components of Athena—before the students returned at the end of the summer in 2009. This was a collaborative effort between CSS, ISDA, OIS, and the Student Information Processing Board.

The KeyServer infrastructure was piloted to assess cost-effective ways to license and distribute software to the community. The pilot began with the Adobe suite of products (Creative Suite 4) and expanded to include Adobe Creative Suite 5 (just released) and Adobe Captivate.

New technologies to deliver departmental consulting and database development were implemented, including the reprogramming the Getfit@MIT web application in Drupal (our content management software); the application of search engine optimization expertise for New Century Cities; the MIT Investment Management Company and the Center for Real Estate; and the deployment of a FileMaker customer relationship management (CRM) system for the Deshpande Center for Technological Innovation (to be used as a model for other CRMs).

The Athena Working Group completed its Phase I report and submitted its recommendations to sponsors Daniel Hastings and Marilyn Smith. The recommendations regarding student printing will be implemented ahead of the other two areas of recommendations, Quickstation kiosks and cluster/computer lab spaces.

An alternate accessible sound editing software was implemented in the Terrascope Radio course curriculum.

Infrastructure Software Development and Architecture

Enhancements were made to Stellar, the Institute's learning management system, to improve and stabilize the current 2.2X version and the usability of the Gradebook tool. Released in September 2009, the Gradebook upgrade included faster page loading, new search capability, and improved grade display and reporting along with grade data import/export. Additional improvements to Stellar included the automatic synchronization of the display of course information and term dates, which make Stellar a more up-to-date resource for students and administrators at the start of term. Other Gradebook updates offered users more options for both the student grade display and the administrative exporting of grades.

Stellar, in partnership with the MIT Libraries, now integrates publishers' pricing information for course textbooks. This is a first step in fulfilling the Higher Education Act's new compliance requirements for textbook information.

In October 2009, the MIT Committee on Educational Technology (MITCET) convened a subcommittee composed of faculty and staff to evaluate Stellar and make recommendations on possible technologies that might better serve our faculty and students in the future. IS&T worked very closely with this subcommittee, gathering detailed requirements from the broader community, matching those requirements against possible solutions, and presenting proof-of-concept demonstrations. The subcommittee delivered its recommendations to MITCET by the end of the fiscal year for consideration at its September 2010 meeting.

The Data Warehouse (DW) concentrated a great deal of effort this year to support SAP, which included verifying data, data extract, and load procedures; supporting central departmental testing for the support packs; and completing modifications to extract and load processes required for the hardware upgrade at the end of the year.

DW created masked production data for Stellar to test the Blackboard application, Graduate Admissions application and education history data for Departmental Consulting and Application Development (DCAD) and Department Lab and Center (DLC) users who "download" data from Grade20, and for Subject Evaluation data.

Other data and reporting related work included:

- Adding new logic to map Library Items with Reserve Catalog, Cleaning Reserve Catalog DW data to allow for integration of ISBN.org price feed into Online Textbook Information (OTI)

- Bringing non-credit IAP data into DW in support of the CoursePicker scheduling tool

- Incorporating WORK date fields into the Appointment History in support of the Assistant Deans

- Analyzing, designing, and implementing the reporting scheme for importing travel data from the Concur Travel System for the VPF.

Kerberos 1.8 was released in March 2010. Features requested by our customers and the user community included crypto modularity, which allows users to insert/replace our crypto library with their own Federal Information Processing Standards series 140–compliant library, and an automatic password lock-out in which the administrator can tailor the number/frequency of allowable erroneous password entries. The Kerberos Consortium has begun work on Kerberos 1.9 (slated for release in December 2010), which will include tools to aid in the testing of Kerberos installations and for configuration validations by administrators and automatic account lock-out when a user fails multiple authentication attempts.

The Kerberos Consortium held its Kerberos Conference at MIT in October 2009 as part of its broad outreach and efforts to gather requirements from the worldwide Kerberos community. Over 70 people attended the two-day event. In addition, the Kerberos Consortium held its quarterly board of directors meeting at MIT that same week.

The Reporting and Forecasting Tool is a collaboration of 16 DLCs and groups across IS&T, including Data and Reporting Services, Content and Collaboration Services, Usability and Accessibility, Documentation and Training, and Server Operations and Database Services). The service was released to the community in January 2010. Since then, 219 users have been trained to use the tool. Requirements gathering for the project's second phase were completed in the last quarter of FY2010.

OCW makes MIT's course material available to the world online for open access. In September 2009, IS&T, OCW, and the MIT Libraries launched a project to replace the content management system underlying the OCW platform, which is no longer supported by the vendor. IS&T worked closely with OCW and the Libraries to develop requirements, select an external firm to perform the work identified, and manage that firm's work. Work was completed in June 2010, on time and under budget. OCW now has a sound and supported content management system to carry it into the foreseeable future.

Operations and Infrastructure Services

CISCO's AnyConnect VPN web service replaced the desktop VPN client, allowing users to securely access various network services from anywhere without having to install software, and reduced the number of software products for which IS&T needs to maintain installers.

Integrated services digital network phones were migrated to VoIP phones in areas with network infrastructure capable of supporting MIT VoIP, resulting in over 9,800 new MITvoip phone accounts. We reduced the number of primary rate interface lines connecting MIT to Verizon and other primary carriers from 48 to eight. Using SIP trunks for outgoing calls has already saved MIT 50% of the long-distance call rate, and the completion of SIP trunk installations will allow us to drop six more lines.

An in-building cellular solution was piloted to determine if the existing network infrastructure could be leveraged to provide cellular coverage over traditional twisted pair copper wiring. The in-building cellular solution enables us to provide cellular coverage in basement areas and in buildings that normally cannot receive cellular signals because of thick walls.

The Video Services team accomplished several important tasks in FY2010. The team made it possible to broadcast quality video feed from any campus location that has a network drop. This enables television and web broadcast of campus events, and was used successfully during President Obama's visit to MIT in October 2009. The team also enhanced IS&T broadcast services by using a unicast network solution to provide connectivity from any MIT location to Building 9 for distribution. Previous technology limited clients to locations that required installation and maintenance of expensive infrastructure. In addition, the team installed five Cisco TelePresence video conferencing units and completed the installation of a regional TelePresence exchange service to support rich collaboration services among universities throughout New England and with corporations and institutions throughout the world.

Student and Administrative Information Services

SAIS began the Online Grading project, which will allow final grades to be entered online and will eliminate the manual processing of 37,000 grades per term by the Office of the Registrar.

The Electronic Document Integration with Stargate project started to transition undergraduate admissions to a paperless reading and decision process.

Student Systems partnered with our business areas to deliver a number of projects that improved the customer experience, enhanced the business process, and provided cost savings to the Institute. They replaced the existing manual process for creating diplomas with electronic diploma production, a process generated from MITSIS, resulting in annual estimated savings of $30,000 of the Commencement budget.
Student Systems partnered with the Office of Undergraduate Advising and Academic Programming and the undergraduate admissions team to implement the Virtual Mailing project, which eliminated a large, manually processed paper mailing and paper-driven

Kerberos ID signup process for incoming freshmen. Incoming freshmen were able to get their MIT identification cards and enrollment information online via their MyMIT accounts.

The Student Services team also facilitated and streamlined other functions of student administrative services, such as the following:

- Added new features to Who's Teaching What, enabling the elimination of paper surveys by October 2010

- Completed a Faculty-mandated project to track compliance with the new HASS requirements

- Completed student ethnicity reporting to comply with federal requirements

- Released a student photo application, permitting administrators to quickly view student information securely online

Administrative Systems started the Enterprise Learning project, which will transform systems supporting business-related training from a disjointed collection of unrelated components into a unified whole, and will be easy to navigate, use, and track. This initiative will help the Institute meet compliance requirements, advance efforts to invest in and manage its human resources, and replace custom applications with more standard solutions.

Other accomplishments of the Administrative Systems team included:

- Achieving the lowest number of open HR/Payroll support/enhancement tickets and the lowest rate of new requests since the HR/Payroll project was implemented in July 2006

- Completing 2010 benefits open enrollment changes and restructuring all union benefits plans to provide more flexibility in the future

- Providing ongoing support and enhancements to administrative systems supporting HR/Payroll, Procurement, Facilities, Finance, and Environment, Health and Safety, including year-end tax reporting and financial closing

IS&T integrated single sign-on for the Travel Collaborative's Cliqbooks online travel site, permitting members of the MIT community to use their MIT credentials to log in to Cliqbooks to book a trip and file related paperwork.

In cooperation with VPF, IS&T worked to ensure that all MIT departments that accept credit card payments do so in a way that is compliant with the payment card industry's data security standards. This ensures that people paying MIT for goods and services via credit cards are protected against fraud and identity theft. IT Security completed incident responses in support of VPF and Alumni.

IS&T successfully completed a multifaceted upgrade to SAP that will ensure a robust, stable, faster, less expensive contemporary SAP infrastructure. Updates included the following:

- Hardware—replaced older Sun servers with newer, faster Dell servers
- Operating system—moved from Solaris 9 to RedHat Linux 5
- Virtualization—leveraged VMware where possible
- Database—converted Unicode character-set and applied Oracle patch updates
- Data center—Brought up new hardware in OC11 data center
- Storage—moved from aging W91 storage area network to newer OC11 SAN

IS&T relocated the MITSIS undergraduate admissions IDD database servers and SAN storage to OC11, completing the three-phase student information system infrastructure move. Newer servers added both memory and CPU capacity to the MITSIS application server environment.

IS&T implemented the Hewlett Packard Quality Center test case management tool and begun automating test scripts. This project should deliver significant savings in annual support-pack testing costs, and SAP upgrade testing costs (planned for 2012). FY2010 automation includes: APR termination test cases end to end; validation of 14 info-types containing numerous fields within the info-type; SAP Portal production monitoring that validates 280 links daily; 10% of the SAP Support pack HR/Payroll, Logistics, and Financial test cases; and additional automation created for the Hardware Renewal project focused on smoke tests for SAPweb. For FY2011 the plan is to integrate automated scripts for HR/Payroll and Financial into QC.

IS&T Headquarters

IS&T partnered with professor Stephen Graves (Sloan School of Management), the Baker House Executive Committee (dormitory), the Undergraduate Association, and CopyTech on several student printing experiments, ranging from an analytics freshman seminar project to the deployment of Pharos printing kiosks in Baker and W20 in the spring term, in order to gauge usability and student acceptance of kiosk-based hold-and-release printing. Pilots remain operational and continue to garner positive reviews from students.

We continued to support the multi-institution effort to create a Massachusetts Green High Performance Computing Center (MGHPCC) in Holyoke. We are working with Boston University, Harvard University, Northeastern University, the University of Massachusetts, Massachusetts state government, and private companies in this endeavor. The goal of this effort is to provide an advanced research computing facility in Holyoke—utilizing low-cost clean energy—for the five member schools as well as other future participating schools. MIT is a key member of this collaboration, based on an earlier conceptual study to develop a Holyoke Green HPCC and to invest in a strategic optical network infrastructure.

The IS&T website was redesigned and re-launched in July 2009. This was a collaborative effort between the IS&T Communications Team, CSS, ISDA, and OIS to help create a unified identity for the organization, increase the visibility of our products and services, and promote our presence inside and outside the MIT community. In addition, accessibility recommendations were implemented that benefited users with disabilities on campus.

As part of a revamped communication strategy, we focused on alternate delivery methods for news and services through the website, social media, and face-to-face outreach. Two key initiatives included launching IS&T's Twitter feed and the project to redesign the IS&T News pages to include videos, blogs, and other social media connections (to be launched in fall 2010).

In September 2009, IS&T participated in MIT Procurement's annual MIT Provider Fair in an effort to promote and market IS&T services to the community. We developed two targeted brochures ("IS&T Services at a Glance" and "Keep in Touch") and reached out to the community through broadcast email messages about new services, targeted forums, and project outreach efforts.

A number of staff from across IS&T took part in training and instruction sessions offered by the Institute, including Administrative Officer (AO) Fundamentals. Two staff members were chosen to participate in the Managing for Excellence program. One IS&T staff member was selected to participate in MIT's Leader-to-Leader (L2L) program, and one successfully completed the Susan Vogt Leadership Fellows Program offered by the Boston Consortium for Higher Education.

IS&T Reorganization in FY2011

IS&T listened to and considered the recommendations of the IT@MIT Working Group to improve systems, services, and the way IS&T serves its customers. The message from the working group's report and from direct outreach to the community was clear— our services are important and should be improved by streamlining and clarifying governance and decision making. IS&T needs to provide simpler, user-centered systems that cost less to maintain. IS&T also needs to improve consistency and cohesiveness in project and service delivery and develop innovative uses of IT that provide long-term strategic advantage to the Institute. To achieve these goals, IS&T reviewed its organization structure as well as the budget goals for FY2011. As a result, in June the department announced layoffs and a reorganization, to take effect in July 2010.

The need for a layoff came in response to IS&T, together with the rest of MIT, being asked to make significant budget reductions over a two-year period. Although we achieved our expense targets and positioned IS&T to be a more efficient and effective organization, it was still necessary to lay off 19 staff. We notified these individuals in June 2010 that their positions were being eliminated and, with the help of Human Resources, we are doing all we can to help the people who were affected find new positions and transition successfully to the next stages in their careers.

Our reorganization reflected a concerted effort to factor in the input both from the IT@ MIT Working Group and from our customers to shape the organization for the work that lies ahead. We organized ourselves to improve focus on major Institute functions—education, research, and administration. Our goal is to strengthen our connections with stakeholders, facilitate the improvement of service delivery, and encourage a customer focus. We will also develop internal partnerships so that we work as "one IS&T," concentrating on the needs of the MIT community.

Working closely with the new IT Governance Committee to determine direction and make investment decisions, the department is now organized to provide IT services to the community with improved effectiveness.

The new organization consists of the following areas: Administrative Systems, Education Systems, Data Management, Systems Engineering, Customer Support, and Operations and Infrastructure, all supported by an administrative area. Key changes from the previous organization include structuring applications areas by function, combining course management and student systems into one applications area, forming a new area focused on applications technical support and interoperability, forming a new area focused on data management, combining some key hardware and software support organizations in our Operations and Infrastructure area, and focusing the Customer Support area on the Help Desk and faculty and student partnerships.

IS&T is proud of its achievements over the past year in improving our services. As we look to the future, IS&T is committed to advancing the Institute's mission by providing foundational IT services that make it easy for the MIT community to communicate, collaborate, and interact with MIT and beyond.

Marilyn T. Smith
Head of Information Services and Technology

More information about Information Services and Technology can be found at http://ist.mit.edu/.