



Annual Report 2001-2002

PrincetonUniversity

Office of Information Technology

Annual Report 2001-2002

PrincetonUniversity

Produced by the staff of the Office of Information Technology.
Office of Information Technology, 315 Nassau Hall, Princeton University, Princeton, NJ 08544.
Copyright © 2002, Office of Information Technology, Princeton University. All rights reserved.
Printed by the Office of Printing and Mailing, Princeton University.

Table of Contents

Letter from the Vice President	5
OIT mission and goals	7
FY02 OIT Timeline	8
OIT, FY02 by the numbers	12
OIT Organization	13
Administrative Systems Planning Group	14
Committee on Academic Technology	15
Research Computing Advisory Group	16
Academic Services	17
Administrative Services	21
Budget and Finance	25
Educational Technologies Center [ETC]	26
Enterprise Services	28
Information Systems	33
IT Architect	38
Partnership 2000	39
Support Services	41

Letter from the Vice President

This annual report for FY 2002, OIT's first full year, reviews the new organization's efforts to meet its goals for supporting the information technology needs of the University's faculty, staff, and students.

OIT inherits a strong and robust technical infrastructure. Once limited to administrative support and advanced scientific research, information technology (IT) is now pervasive in all aspects of teaching, research, scholarship, and administration. IT services reach dormitories, offices, classrooms, laboratories, and study areas. Members of the University community have come to depend upon information technology for research, teaching, learning, and administration. Throughout the year, OIT has worked hard to improve existing, and offer new, information technology services. We are proud of the continuing efforts of our staff in support of the University's mission. Princeton is fortunate to have a host of knowledgeable, hard-working staff who are dedicated to the finest possible information technology support.

A year of significant accomplishments

Throughout the year, OIT worked hard to improve information technology support for the entire University community. We reorganized and redesigned our OIT web pages. A special A-Z section simplifies community access to relevant information and services. A new newsletter, "IT Matters," helps to improve communication about OIT's services. The OIT Help Desk expanded the hours of operation to 24 hours per day, five days per week. In response to customer requests for a live news service in the wake of the Sept. 11, 2001 terrorist attacks, OIT initiated a live 24-hour MSNBC news project. And a new online web-based calendar consolidates information about all public events.

OIT worked closely with faculty to improve our academic computing support. We completed several courseware projects, including Tchaikovsky and the West, the Western Way of War, and What Russian Culture Teaches Us About Post 9/11 Life. We received a planning grant from The Andrew W. Mellon Foundation to explore ways in which faculty might use film and video effectively to enhance teaching and learning. OIT also upgraded its Course Management System, Blackboard, in order to offer many enhanced capabilities.

This past year, we continued to ensure that our infrastructure will meet the rising needs of the University community. We augmented network speed from 50Mbps to 70Mbps and enhanced its reliability by contracting with two commodity Internet service providers. We are now past the mid-way point in a multi-year, campus-wide upgrade to the network infrastructure. New, more robust mail servers for undergraduates and staff now back each other up in the event of system failures. A more powerful "webmail" server supports the growing number of users who need access to their mail while traveling. We improved the reliability and functionality of our network monitoring systems by upgrading the hardware and software that watch over our web-based systems, databases, and other applications. We opened six new clusters, all in time for the start of the academic year. And we replaced older departmental machines with new Windows 2000 machines.

In the area of administrative computing, progress continues towards new, distributed client-server systems. Among the key applications delivered during FY02 were Time Collection, PeopleSoft HRMS, Departmental Managers Desktop (DEMAND), Housing, PeopleSoft Graduate Student Status, Departmental Charges, Assets & Equities, and the last phase of Stripes, the Development application. We upgraded the "Coeus" proposal/award management system, a very reliable tool for

managing sponsored research proposals and award data. OIT “unplugged” the IBM mainframe over the weekend of April 27-28, 2002. A new MP2000 enterprise server is running three student systems (Undergraduate Admissions, Financial Aid and Student Records) until the new client-server systems are available to replace them. And by migrating the Data Mall to new servers, our customers are experiencing a significant improvement in response time.

The organization of OIT

During its first year, OIT also entered into a dialogue with the campus community about our collective wants and needs in the area of information technology. As a result of these many conversations, we gave serious thought to how best to serve the campus and undertook a significant organizational change at the very end of the period under review. In July 2002, to improve an organizational structure that sometimes seemed complex and confusing, we consolidated OIT from nine to five departments, eliminating redundancies, clarifying roles and responsibilities, and focusing the organization on meeting the needs of the University community. It is our hope that the new organizational structure will facilitate the delivery of IT services to the campus, ensure organizational flexibility, and ease customer interactions with OIT staff.



Betty Leydon
Vice President for Information Technology
and Chief Information Officer

OIT mission and goals

The mission of OIT is to enable the effective use of information technology in support of the University. In pursuit of this mission, OIT's goals are to

- Deliver information technology products and services that meet the needs of the University community and achieve the highest levels of customer satisfaction;
- Support the use and development of information technology to enable innovation in teaching, learning, research, and scholarship;
- Provide leadership in planning for the effective use of technology;
- Provide a robust, reliable, and secure information technology infrastructure;
- Attract, develop, and retain quality information technology professionals;
- Enable communication and collaboration among information technology professionals and users of information technology at the University.

FY02 OIT Timeline

July, 2001

The Educational Technologies Center releases Animal Behavior Part II, courseware that draws upon four topics in James Gould's popular EEB311 course.

The Language Resource Center digitizes and places online new audio materials for six textbooks.

OIT rolls out Microsoft's new Student Select program. The new program permits University students to buy licenses for Office XP Professional (and Standard) and Windows XP upgrades for the first time.

OIT implements automated classroom scheduling using the Resource25 and Schedule25 software and integrates the tools with PeopleSoft Student Administration and the Facilities Space Management system.

Time Collection, a stable, production system that pays approximately 5,000 employees (biweekly, casual and student) every other week goes live. The system incorporates more than 250 calculation rules that cover six unions and business rules specific to the University.

The University installs a 100Mbs replacement for the 10Mbs microwave link connecting the campus and the Forrestal campus and a new 45Mbs microwave link to 22 Chambers Street, the new location of the Communications Department.

The IBM/Tivoli system management software, the core of the University's system monitoring strategy, is extended to provide additional monitoring services for Oracle databases.

August, 2001

Staff in OIT design and implement a new OIT web site that eases access to information about OIT services.

33 Residential Computing Consultants take part in a two-day intensive training program conducted by OIT.

OIT begins to pilot a new use of the Blackboard course management system, video-based course introductions.

OIT increases the University's Internet bandwidth from 50 Mbs to 70 Mbs by contracting with two commodity Internet service providers, AT&T (at 45Mbs) and Fastnet (at 25Mbs). The two providers share the campus Internet load and provide automatic fall-over in case of failure.

As a step towards implementation of a disaster recovery plan for campus computing facilities, the University creates an alternate machine room location at New South. The effort secures critical network services and enhances the overall reliability of campus computing services.

To increase network speed and to enhance reliability, the University moves its Internet2 connectivity from the vBNS network to the MAGPI gigapop at the University of Pennsylvania.

OIT extends the use of Tivoli web monitoring to include web-based applications such as the Data Mall.

Enterprise Services moves the Unix printserver service to a new, more reliable hardware and software platform.

September, 2001

In the aftermath of September 11, 2001, OIT helps to establish a Critical Call Center and initiates a live 24-hour MSNBC news web-streaming pilot project.

Working closely with Communications, OIT implements a Crisis Response web site that provides urgent, continually-updated information to the world-wide University community.

Faculty members Miguel Centeno and Norman Itzkowitz host the first live, online "precept" on terrorism.

During the first full week of classes, the Residential Computing Consultants visit the room of every first- and second-year student to ensure their successful connection to Dormnet.

OIT integrates student pictures into the Blackboard courseware system, essentially an online version of the traditional Facebook.

The availability of specialized computing clusters that provide high-speed access to CD-quality audio and video material permits faculty to accelerate the integration of video materials into the curriculum. During the fall semester, the video server supports more than 3,200 accesses.

OIT implements UnipriNT, a print accounting system for public printers that results in a 10% reduction in pages printed.

For the first time, network connections for students in University dormitories (Dormnet) are included in the basic room rate, eliminating separate fees and ensuring that all students will have network access from their dorms.

October, 2001

By the start of the fall semester, 932 students (735 undergraduates and 197 graduate students) have purchased computers through the Student Computer Initiative program.

OIT implements a new online service that permits members of the University community to update or correct their personal information at a web site for the first time.

A new subscription service permits users to sign up for automated e-mail notices of upcoming live WebMedia events. The WebMedia Service continues to provide access to hundreds of public lectures, academic language courses, class lectures, alumni courses, special events (such as commencement and baccalaureate), conferences, and sporting events.

The Development Office “goes live” with their new Advance fundraising database known as STRIPES II.

The OIT Help Desk implements a new electronic system for requesting hardware and software support. As a result, OIT customers can now call the Help Desk for their hardware and software needs.

OIT installs a new mail server for undergraduate students and upgrades the University’s webmail service to a more powerful and faster server.

November, 2001

OIT launches Cluster in a Box (CIAB), 16 desktop machines with all the necessary networking, power, and cabling to create a portable cluster. Departments can borrow CIAB by calling 8-3936.

OIT purchases the Virage video content management system. Using Virage, OIT staff begin to convert speech to text and to index multimedia broadcasts. Users are now able to search and display video, audio and other digital media.

ETC and the Library jointly purchase a site license for Environmental Systems Research Institute’s ArcGIS 8.1 and ArcView 3.2a [GIS] geographic information system software. Three 3-hour workshops introduce users to the GIS software.

At the request of the Dean of Faculty, OIT builds a web-based Online Faculty Voting application to create and manage on-line elections. The application results in a dramatic increase in faculty participation in faculty committee elections.

OIT assumes responsibility for the Faculty Computer Program from the Provost’s Office. The program will continue to make computers available to the Faculty at no cost.

OIT automates the collection of print usage statistics from cluster printers.

December, 2001

OIT implements Google’s free University search engine as the main University website search engine and assists many departments to integrate Google into their websites. The new engine is faster, more accurate, and results in a significant improvement in the success rate of searches.

In cooperation with the Woodrow Wilson School and the Politics Department, OIT installs DMS/COPY in OIT clusters. The software package permits users to transfer data easily between more than 80 different software programs.

OIT implements a new mailing list service that has an easy-to-use web page interface for managing lists and reviewing messages in the archives. Staff successfully migrate more than 1,800 lists and their archives from an older list service system.

The Help Desk staff assumes responsibility for managing the University’s central e-mail lists.

January, 2002

OIT increases Unix disk-space quotas from 10MB for all students to 20MB for undergraduates and to 30MB for graduate students.

Telecommunications Services and the Frist Center jointly extend telephone operator coverage during nights and weekends.

Staff use DBToolBox to create a scheduling system for the Writing Program and a registration form for the Program in Law and Public Affairs conference.

ETC moves from the Engineering Quad to the third floor of the Frist Campus Center next to the McGraw Center for Teaching and Learning.

Printing and Mailing replaces the Scitex printer and feeding base, a system that was installed in 1982, with the Marconi addressing and tabbing system. The new system greatly improves third class bulk mailing by efficiently moving address files into production.

OIT staff convert the Assets & Equities investment management system from the mainframe to a browser-based system.

OIT offers a web page monitoring service to departments. As part of this service, OIT notifies users and departments when their web servers and pages are malfunctioning.

February, 2002

The University receives a Planning Grant of \$25,500 from The Andrew W. Mellon Foundation to explore ways in which faculty might use film and video effectively to enhance teaching and learning.

OIT implements a new, more secure service for sending e-mail called Simple Mail Transfer Protocol with authentication (SMTPAuth). As a result, users are required to enter their password before sending e-mail.

OIT implements the new Departmental Managers Desktop (DEMAND) Uportal application for all department managers (and/or their designates). The DEMAND portal delivers easy access to administrative applications, the Princeton Web, the Princeton Data Mall, and department-specific applications or resources, all in one web site.

ETC releases the new Almagest database project, Chinese Hand Mnemonics, by Professor Marta Hanson. The project permits students to easily compare and contrast all of the images in the database.

OIT installs additional storage containers for 150,000 feet of cable to meet the increased needs of the University's building-wiring projects. Larger purchases translate into lower costs through volume discounts.

March, 2002

ETC offers a new service to digitize batches of slides and place them on a University server. As a part of this service, ETC will also assist faculty in cataloguing the slides. ETC will also make 35mm slides from digital images.

Negotiations with MSNBC result in the right to deliver programming over the princeton.edu network in RealVideo and Windows Media formats.

OIT purchases a site license for Norton Anti-Virus. Members of the University community can now install this software on their personal computers at no charge.

A site license agreement with Adobe Systems permits departments to purchase single licenses for Adobe's Acrobat software for individual use.

Printing and Mailing Services begins to offer On-Demand color printing. Sending Postscript files by e-mail to Printing places them directly in the print queue. New equipment supports posters up to 20 feet long.

The OIT Documentation and Standards Team develops "quick reference card" documentation for the 300 users of DEMAND.

April, 2002

As a result of the P2K initiative that moved most administrative systems to distributed platforms, the IBM mainframe is decommissioned. The MP2000 enterprise server will now run three student systems, Undergraduate Admissions, Financial Aid and Student Records, until these systems can be replaced.

ETC releases three courseware packages: Faustus Anatomized, What Russian Culture Teaches Us About Post 9/11 Life, and Tchaikovsky and the West

OIT completes a six-month migration to Microsoft Windows 2000 Server (Active Directory). A test Exchange 2000 Mail Server becomes operational.

OIT completes new web interfaces that streamline the Faculty Computer Program and the Student Computer Initiative for purchasers, support staff, and vendors.

Hands-on training courses include "Data Mall Searching for Financials," "Advanced Data Mall Searching," and Requisitions and Receiving."

35 OIT support staff receive on-site training for Microsoft Certified System Architect (MCSA) certification.

May, 2002

ETC releases a new courseware package, The Western Way of War.

The University Events Calendar goes live. This new online calendar consolidates information about all public events. Departments and student organizations maintain the information. Users can view and search brief or detailed displays of events.

OIT rewires and upgrades the Architecture Building and Firestone Library. The upgrades provide access in these buildings to higher speed "switched Ethernet" data networking services.

OIT installs a new web-based graphing tool for network monitoring. The tool adds hundreds of new graphs that visually illustrate the on-going status of the University's network infrastructure.

OIT helps Facilities implement the Diebold Housing software to replace their mainframe housing application. A web-based housing application will be deployed in Spring 2003.

Growth in the number of users permits OIT to reduce the monthly Tigernet charges for its 10 MB (by 19%) and 100 MB (by 40%) services. OIT also reduces the charge for wireless access points by 30%.

OIT migrates the Data Mall to new servers. As a result, Data Mall customers experience a significant improvement in response time.

June, 2002

OIT supports an Alumni Counsel request for open network access during reunions. As a result, visitors can plug in their laptops and connect to the campus network without having to register their computers.

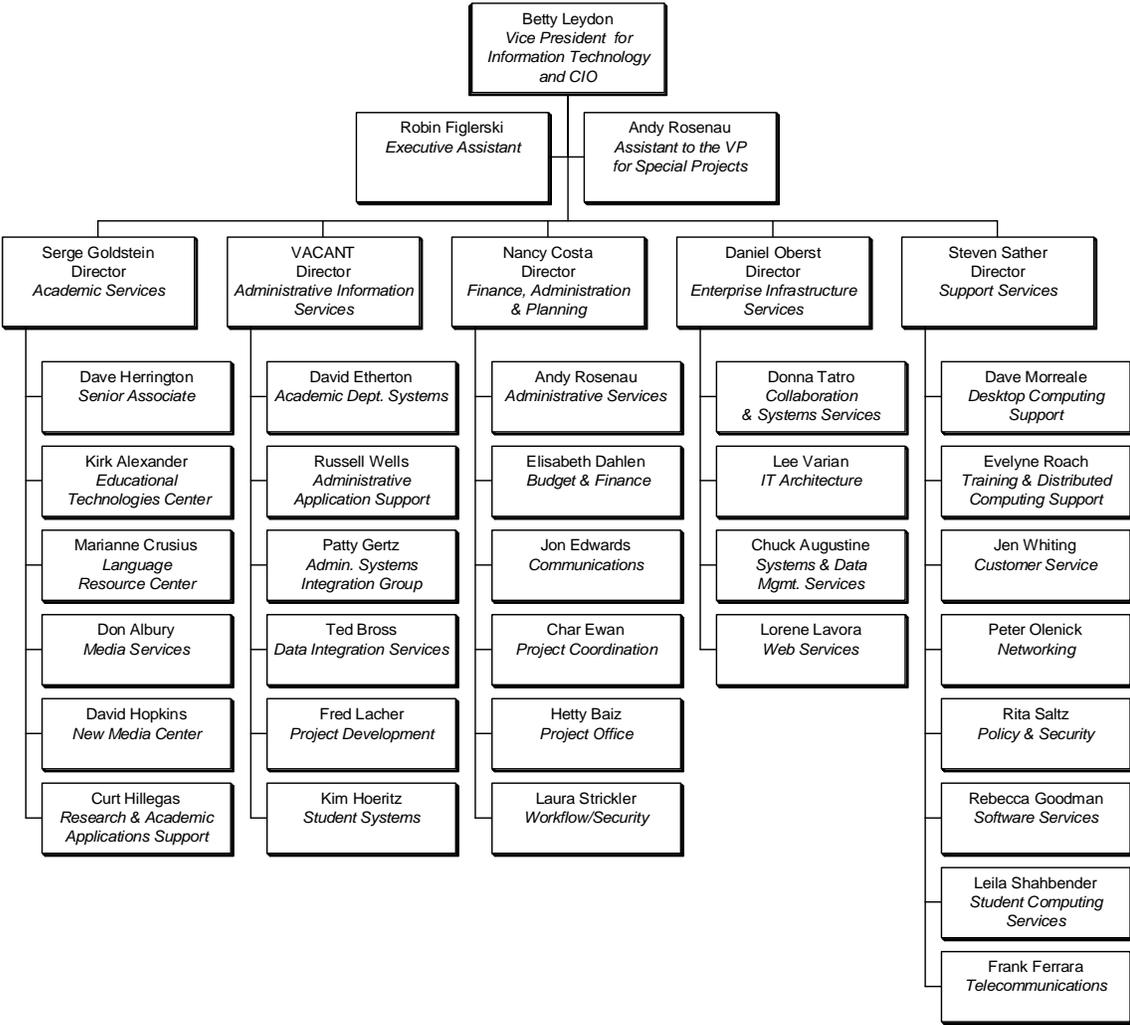
The PeopleSoft HRMS system consisting of Human Resources, Payroll and Benefits Administration goes live.

The Treasurer's Office implements a new Operating Budget System that replaces mainframe functionality.

OIT, FY02 by the numbers

5,000,000,000,000	Bytes available in online disk space
70,000,000	Bits per second over the University's updated commodity Internet connection
45,000,000	Bits per second over the new microwave link to the Communications Department
24,000,000	Total telephone calls, more than many small cities
7,609,635	"Visits" to the OIT Knowledge Base web site from 90,899 unique IP addresses
5,941,063	Pages printed in public computer clusters
3,000,000	Dollars in revenue at Telecommunications Services
2,627,720	Dollars in net revenue in Printing and Mailing Services
250,000	Dollars in software sales
225,000	Computer viruses and worms identified and captured by the new anti-virus service
150,000	Feet of cable, stored by OIT for the University's building-wiring projects
100,000	E-mail messages delivered daily to 18,581 University individuals and organizations
100,000	Documents in the princeton.edu domain indexed by the Google search engine
80,000	Impressions per month on Printing's Xerox 2060
50,187	Telephone calls to the OIT Help Desk
34,000	Jobs submitted to, and monitored, on central OIT servers
25,500	Dollars from the Mellon Foundation to explore new uses of video in classrooms
20,000	UNIX accounts on the administrative and academic central systems
14,433	Special events and meetings scheduled in Frist using Resource25
14,000	Voice mailboxes in service
12,000	W-2 forms produced for the Payroll office.
7,100	Academic and administrative telephone lines
7,000	Work "tickets" tracked progress and resource commitments in Support Services
5,769	Visits to the Language Resource Center
4,250	Work orders processed for telephone work
3,200	Accesses supported by the Digitized Video Server
3,190	Event setups, operations, and pickups by Media Services
2,983	Support issues and projects to which Support Services responded
2,400	Desktop Systems Council [DeSC] administrative desktop computers supported
2,325	Videos in the University's video collection
2,200	Videos checked out at the Language Resource Center
2,077	"Tickets" responded to by residential college consultants
1,530	People per month connecting to the campus via OIT's dial-in remote access service
1,128	Undergraduates in non-language courses who use the digitized video server
1,125	Work orders processed for Voice Mail service
1,113	Video connections installed
1,047	Walk-in visits to the New Media Center
1,000	Machines upgraded from the old ADSM backup server to the new TSM server
766	Calls to the OIT Help Desk on March 26, 2002, the year's highest single day call volume.
470	Course web sites for the spring semester
393	Events supported by Media Services staff
326	Computers in public clusters
280	Users of the new Department Manager's Desktop [DEMAND] portal
250	Calculation rules contained in the new Time Collection System
200	Unix Servers supported by OIT
192	Classes use video recording services
150	Dormnet repairs
32	New hires
24	Administrative systems replaced under Partnership 2000
22	Staff departures
14	New administrative systems added under Partnership 2000
7	Cents per minute for long distance service, the lowest rate in the Ivy League
0	The amount of unscheduled network downtime

Office of Information Technology - July 2002



Administrative Systems Planning Group

The mission of Partnership 2000 [P2K], the University's new administrative architecture for distributed information systems, was "to enable the improvement and innovation of administrative processes and services at Princeton University through the replacement of all administrative systems so that we achieve savings and maximize our contribution to research and education." P2K sought to:

- Deploy a standard, modern information technology infrastructure;
- Bring the University into Y2K compliance;
- Adapt quickly to changing conditions and to demands for information;
- Simplify the storing, searching, and reporting of information;
- Take advantage of the processing power and the ease-of-use inherent in desktop machines by moving systems off the centralized mainframe.

The Administrative Systems Planning Group [ASPG] will critically assess P2K efforts, determine existing needs, and identify key opportunities to leverage further our administrative systems investments. The specific charge of this group is to:

- Evaluate current administrative systems, identify gaps and needs, and determine the steady-state costs of maintaining current administrative systems;
- Assure that the University's administrative systems meet the needs of faculty, staff, and students;
- Recommend the appropriate distribution of resources for new maintenance, upgrades, and development efforts that will enhance the University's systems;
- Create a strategic plan to guide administrative activities for the next five years.

The group will establish a working committee to gather needed information and develop initial recommendations. Based on input from the working committee, the group will set high-level direction and prioritize projects. During FY02, members of the planning group were:

Janet Dickerson, Vice President for Campus Life
Joseph Greenberg, Registrar
Nancy Malkiel, Dean of the College
Jed Marsh, Associate Provost
Christopher McCrudden, Treasurer
Brian McDonald, Vice President for Development
Kathleen Mulligan, Vice President for Facilities
Daniel Scheiner, Acting Vice President for Human Resources
Joseph Taylor, Dean of the Faculty
Karin Trainer, University Librarian
John Wilson, Dean of the Graduate School

Ex-officio: Hetty Baiz, Project Office Manager, Planning Coordinator
Nancy Costa, Director, Partnership 2000
David Koehler, Director, Information Systems (Group Facilitator)
Betty Leydon, Vice President for Information Technology

Committee on Academic Technology

With the advent of the World Wide Web and the increasing use of digitization, faculty members and students are increasingly using information technology in teaching and learning. There is a growing need to ensure that appropriate academic technologies are available to the campus and that they are used to achieve objectives that are knowledgeably chosen and consonant with the University's academic mission. The Committee on Academic Technology [CAT] exists to meet this need by facilitating communication and collaboration between IT providers and the offices at Princeton most directly responsible for the curriculum. The specific charge of the committee is:

- To serve as an informational clearing house, so that those responsible for technology and those responsible for the curriculum are well-informed of each other's initiatives;
- To develop new initiatives to enhance the curriculum through information technology;
- To help in evaluating IT initiatives from community members that affect the curriculum and to prioritize the distribution of resources;
- To provide leadership in assuring that the use of academic technologies in the curriculum receives appropriate assessment, both evaluative and formative.

During FY02, members of the committee were:

Chair: Hank Dobin, Office of the Dean of the College
Kirk Alexander, Educational Technologies Center, OIT
Serge Goldstein, Academic Services, OIT
Lin Ferrand, Office of the Dean of the Faculty
Lorraine Sciarra, General Counsel's Office
David Redman, Graduate School
Jane Bryan, Library
Georgia Nugent, The McGraw Center for Teaching and Learning
Katharine Rohrer, Provost's Office

Research Computing Advisory Group

The Research Computing Advisory Group [RCAG] will advise and collaborate with OIT on matters related to research computing at the University. The specific charge of this group is to:

- Advise OIT on the research computing needs of academic departments;
- Collaborate with OIT on various projects related to research computing;
- Advise OIT on the software needs for research computing;
- Determine the initial content of PSR – the Princeton Software Repository.

During FY02, Members of the RCAG were:

Mary Lynn Baeck, Civil and Environmental Engineering staff
Peter Bunge, Geosciences faculty
Bruce Draine, Astrophysics faculty
Bjorn Enquist, Applied and Computational Mathematics faculty
Hank Farber, Economics faculty
Sal Fattoross, Ecology and Evolutionary Biology staff
Paul Lansky, Music faculty
Jim Roberts, Computer Science staff
David Srolovitz, Mechanical and Aerospace Engineering and Princeton Materials Institute faculty
Doug Welsh, Molecular Biology staff
Bill Wichser, Princeton Materials Institute staff

Academic Services

Academic Services (AS) works with faculty, students and staff to incorporate information technology, applications, and media resources into teaching and research. Over the past few years, especially with the emergence and remarkable growth of the World Wide Web and the growing interest among faculty in classroom and research technologies, services in support of academic computing have taken on much more importance. Academic Services brings together within a single department those OIT units and staff members who are primarily involved with support for academic computing.

The unit incorporates Media Services, the Language Resource Center, Academic Technology Services (including the New Media Lab), and a new group, Academic Applications. This new department confirms the importance that the University places upon academic computing efforts.

Highlights

Organizational improvements

During FY02, the University launched the Research Computing Advisory Group, consisting of faculty and IT staff, to oversee OIT's development of support for research computing. The committee met four times during the year and helped set new directions, especially with respect to academic software support. During FY03, the committee will devise additional strategies to enhance support for research computing.

Also during FY02, the University launched the Committee on Academic Technology (CAT). This committee is charged with overseeing coordination between OIT's academic technology effort and the broader academic work of the University, particularly with respect to curricular issues.

Online Faculty Voting

At the request of the Dean of Faculty, AS's Academic Applications group built a web-based Online Faculty Voting application. The application, which permits the faculty to vote online, has already resulted in a dramatic increase in faculty participation in faculty committee elections.

Course Websites

In support of the increased use of the University's course management system, AS upgraded the software infrastructure from CourseInfo 4 to Blackboard 5.5. AS also integrated the Blackboard system with the PeopleSoft enterprise applications.

Planning Grant from the Andrew W. Mellon Foundation

In February, the University received a planning grant of \$25,000 from The Andrew W. Mellon Foundation to explore ways in which faculty might use film and video effectively to enhance teaching and learning. Activities during the planning grant included a review of related efforts throughout higher education, an assessment of needed archive capabilities, and a series of discussions with faculty, students, and administrators.

During the past two years, there has been a significant increase in the use of video to support teaching and Princeton public events. www.princeton.edu/WebMedia contains an archive of public lectures and special events. In preparation for the Planning Grant, the University videotaped and placed all of the lectures for English 363 (American Literature: 1930-present) online at www.princeton.edu/ats/eng363.

Language Resource Center (LRC)

The LRC supports the use of audio, video, and multimedia materials for specific assignments and for self-directed study. The Language Resource Center runs the central language support laboratory and manages the University's collection of video materials (DVD, CD, tape) and the University's central digitized video server.

Highlights

Yearly activity

During FY02, the LRC recorded 5,769 visits, 2,641 in the fall and 3,128 in the spring. Videos (including DVD's and laserdiscs) were checked out 1,000 times in the fall and 1,200 times in the spring.

New LRC

A new location in East Pyne is being readied for the LRC for the summer of 2003. LRC staff have been involved in planning the new facility and met frequently with the architects and AV consultants. The new resource center will include two film-viewing rooms for small groups and an electronic smart classroom.

Language Enrollment

For the last three years, the overall enrollment in introductory level language classes has remained fairly constant at approximately 2,000 students. The enrollments in French and German have decreased by 9% and 22% respectively, but the numbers for Arabic have increased by 66%. The number of students studying Spanish, by far the most popular language for the last decade, rose 5% to 808. 506 students were enrolled in upper-level language courses. The 33 non-language courses using the digitized video server had an enrollment of 1,128 students.

Audio

LRC staff digitized and placed online new audio materials for six textbooks. During FY02, the number of students checking out analog copies decreased by 25% to 45. With the move to the new location in East Pyne in fall, 2003, the LRC will discontinue the take home service.

Video Library

The use of video continues to increase and the University's video collection is growing rapidly as more and more faculty become aware of Firestone Library's video acquisition policy. During the year, the number of videos in the collection increased by 555 and DVD's by 127 bringing the totals to 2,325 and 162 respectively. The laserdisc collection remains at 205.

During FY02, faculty increased the number of videos on reserve by 45% to 906. Owing in part to a more liberal circulation policy in Firestone Library, the number of videos checked out rose by 60% to 1,608. During the summer of 2001, the University merged LRC video listings with the holdings in Firestone Library. As a result, patrons are now able to search the entire collection more efficiently. The LRC now has the voyager cataloging and circulation software used by the Library.

Distributed Media Centers (Digitized Video Server)

The DMCs are specialized computing clusters that provide high speed access to CD-quality audio and video material stored on a central video server. The availability of such facilities in the Residential Colleges have permitted faculty to accelerate the integration of video materials into the curriculum. The centers permit students to view very high quality video (DVD) on demand, 24-hours a day, 7 days a week.

In the fall semester, in addition to 16 language classes, 15 non-language courses (748 students enrolled) accessed 92 videos (up from 45 last fall) on the server. During the spring, 8 language courses and 18 non-language courses (380 students enrolled) viewed 104 videos. The server supported more than 3,200 accesses, 1,161 from stations in the LRC and more than 2,000 from remote locations.

Academic Applications

Academic Applications investigates, acquires, and builds applications in direct support of instruction and research.

Highlights

BlackBoard

Academic Applications developed specialized code to integrate student pictures into Blackboard. The result is an online equivalent of the traditional Facebook. In addition, the group extended Blackboard to permit Princeton alumni to access alumni courseware.

CONDOR

The University of Wisconsin is developing software that permits use of spare machine cycles. Advanced Applications efforts to deploy CONDOR on University administrative desktops were terminated due to concerns over the reliability and integrity of the software. Advanced Applications is now focusing efforts on use of the product on campus UNIX computers.

PSR – The Princeton Software Repository

Princeton has long maintained a central repository for software. Advanced Applications is augmenting the service and making it more useful to the user community. A new web interface permits users to search for, request, and obtain, academic software applications.

Faculty Voting

Advanced Applications developed a web-based application that permits the Office of the Dean of the Faculty to create and manage on-line elections. The application quickly resulted in a dramatic increase in faculty voting. Turnout for the first few on-line elections exceeded the highest turnout for any paper ballot election. The Office of the Dean of the Faculty DOF has requested enhancements that are now in process. Several departments have requested other voting applications that are also under development.

Media Services

Media Services provides both academic and special events support to the University community, including all classroom technology requests (audio-visual support, video support, and computer support in the classroom).

Highlights

Classroom Support

Faculty and other presenters increasingly have their own portable computer systems. As a result, Media Services staff are more and more involved in training and “triaging” problems rather than setting up presentation equipment. These and other non-billable services involved 392 events and more than 1,132 hours of non-cost recovery time.

Non-Course Support

During FY02, Media Services maintained its support of non-course related events. These included Alumni Day, Freshman Parents Day, Reunions, 47 Public Events (including the University public lecture series, The President’s Lecture series, Louis Clark Vanuxem lecture series, Stafford Little lecture series, Scribner series, James Madison Program in American Ideals) Baccalaureate, Graduate Hooding Ceremonies, Commencement 2002, and the installation of President Tighlman.

Video/Film Support

Media Services provided video recording services for 192 classes, including POL 390, AST 203, CIV 262, CEE 263, EEB 211, ENG 363. Media Services provided in-room operators for 378 course events, 413 non-course events, and a total of 3,190 event setups, operations and pickups.

Media Services supported all course related 35MM projection at the Jimmy Stewart Theater. In addition, Media Services provided both 35MM & 16MM projection services for film courses and festivals showing multiple films for Italian & Portuguese, Visual Arts, the Art Museum, Germanic Languages, English, Comparative Literature, NES and the Study of American Religion. Courses included VIS 344, 347, GER 525, HIS 380, and ENG 404, 335.

Satellite services continued to provide foreign language programming on two dedicated channels. In addition, Media Services downlinked 10 special teleconferences and 44 videoconference events in the new Wallace videoconference seminar room.

Media Services also provided Digital DVCAM, BetacamSP, and SVHS mastering of various venues including EEB seminars, Student Bioethics Forum, Fall Assembly, and Diversity lecture, SHARE programs “Sex on a Saturday Night”, lectures by prominent speakers such as, Charles Falco, Bernard Lewis, Michael Graves, Tony Kuhner, Stewart Smith, Frank Gehry, Steven Pinker, Lynne Cheney, Arun Ghandi, Wesley Smith, Robert Moses, Jean Bethke Elshaintain, James Randi, Paul Ehrlich, Sydney Brenner, Robert Dahl, Reverend Jessie Jackson, Ravan Farhadi, and several lectures and events in the aftermath of 9/11.

Installation/Equipment

Media Services staff consulted on the design and installation of data projection systems in Bobst Hall, McCosh 28 & 46, Guyot 10, McCosh 66, Frick 124, Bowen 222, Jadwin A10, and Jadwin A06, A09. Staff assisted in the engineering of a new multimedia system in Lewis Thomas 003. Staff also oversaw the opening of the Friend Center, a building that contains 25 multimedia teaching spaces including a 200 seat auditorium and 35 seat videoconferencing facility.

Academic Technology Services [ATS]

Academic Technology Services runs the University’s New Media Center, supports the Blackboard course management system, and offers training in information technology to faculty and students.

Highlights

New Media Lab

The New Media Lab hours were extended during the academic year from 1:00 pm - 5:00 pm Monday through Friday to 1:00 pm - 7:00 pm.

Instructional Technology Training

ATS staff developed a new DBToolBox-based registration system for their lectures and training workshops. During FY02, staff held the following lectures and workshops on digital media and instructional technology:

- 13 brown bag lunch lectures
- 35 open-enrollment workshops
- 30 “special request” workshops
- 40 Bb faculty office visits

Digital Video

As part of its involvement in various video projects, ATS helped promote awareness of the possibilities of digital video in an academic setting. During the academic year, staff:

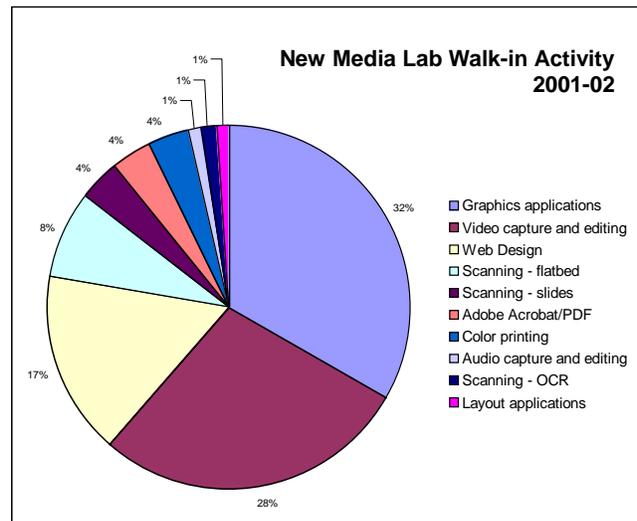
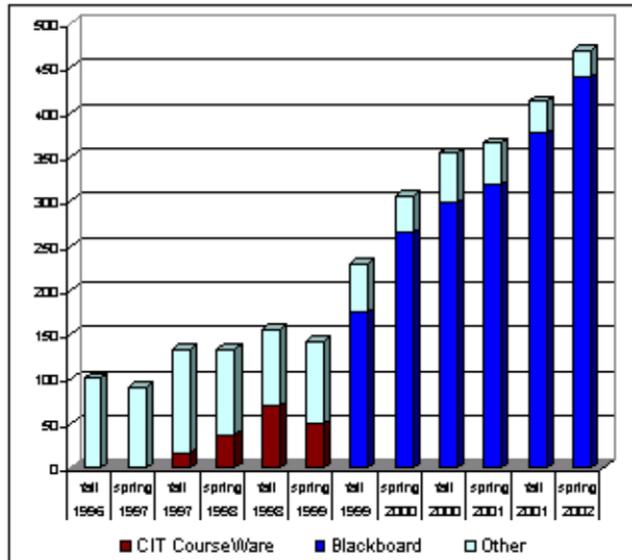
- Ran an introductory course video pilot project, filming and editing 22 videos with an average length of four and half minutes;
- Filmed, edited, and streamed over the web all lectures for ENG363 and POL309;
- Created introductory lab videos for ELE208;
- Created student presentation videos in FRS109;
- Filmed ELE student car race and placed an edited version on the web;
- Tested Virage video software and integrated its capabilities into these video projects.

Blackboard course management system

The table below illustrates the dramatic growth in the number of course web sites at the University. During FY02, in support of the increased use of the University’s course management system, AS upgraded the software infrastructure to Blackboard 5.5. The main FY02 accomplishments include:

- Conducted a beta test program for Blackboard 5.
- In preparation for Fall 2001, migrated all activities from CourseInfo 4 to Blackboard 5.
- Tested use of SSL with Blackboard on a development server.
- Oversaw the implementation of the Blackboard alumni project, including authentication and a special portal page.
- Managed various projects to extend and/or promote Blackboard:
 - Course enrollments interface with Registrar’s Office
 - External e-mail lists, based on Blackboard course enrollment
 - Student photo availability within Blackboard
 - Interface with eReserves
- Retained other Blackboard related projects:
 - Office hour scheduler
 - Staff information and photos
 - Login bypass redirect
 - Course meeting times in calendar
 - Assessment “Staying Alive” script.
- Maintained Blackboard FAQ and Faculty Resource site.
- Prepared for, and executed, Blackboard 6 beta test.
- Managed Blackboard “Hotline,” ensuring customer queries were handled quickly and smoothly.

Princeton University Course Websites, by term



Administrative Services

OIT's Administrative Services consists of four groups:

- Policy and Security
- Printing & Mailing
- Telecommunications Services
- Vendor Relations (including the ID Card Office and Copier Center)

In addition, Administrative Services is responsible for managing OIT's human resources function, facilities management and planning, as well as other OIT internal support functions.

Highlights

Human Resources/Facilities Management

FY02 was the first year operating under the new IT classification structure. While many of the real benefits such as more control over in-band and out-of-band salary adjustments will not take effect until FY03, the new classification structure allows for greater flexibility in response to a changing IT workforce.

In FY02, OIT spent \$47,500 on staff bonuses as part of the OIT Bonus Program. For the first 3 years, the program operated as a pilot. During FY02, OIT made the program permanent.

In December of 2001, OIT submitted a detailed plan for future space requirements.

Policy and Security

The Policy and Security group is comprised of one staff member who, in an advisory role, coordinates the policy and security function. Policy and Security provides advice to deans, directors, department heads, and other appropriate University officials regarding breaches and violations of University guidelines and related University policies. Policy and Security oversees the investigation of cases involving fraudulent use of real or fictitious University electronic mail.

The Priorities Committee has approved funding beginning in FY03 for an IT Security Officer. Many of the new policy directions in this area are awaiting the new hire.

Highlights

Security

Policy and Security maintained information regarding virus sightings at the University on the OIT "Protection" website: www.princeton.edu/~protect/Ware/Viruses.shtml

Policy and Security submitted daily reports to Director of Public Safety on campus cybercrime incidents.

To keep the community apprised of new cyber threats to systems and services, Policy and Security circulated relevant security advisories and alerts, bulletins, and news items to appropriate campus computing support personnel.

In conjunction with Department of Public Safety, Policy and Security provided assistance to victims of threatening e-mail or harassment.

Policy and Security assisted Princeton Borough Police and the Morris County Prosecutor's Office regarding crimes involving Princeton University computers.

Policy and Security investigated and resolved all alleged infringements of copyright involving information technology on campus. Valid complaints involved MP3 format music, full-length films, episodes of television shows, computer games, proprietary software, and published textual materials.

Policy and Security also investigated cyber-attacks originating from or coming through the Princeton.EDU domain systems, including "spam" e-mail apparently originating from or relayed through the domain. Staff provided advice and assistance to community members whose computers were involved in such incidents.

Outreach

During FY03, Policy and Security sought to enhance the level of support available to the computing support people assigned to academic and administrative departments, who often manage their own instructional technology resources. Policy and Security met this goal through the use of e-mail listserv's and other electronic resources.

Additional efforts will be required to raise awareness of electronic security concerns and the importance of individual responsibility in protecting the University, its departments, and its faculty, students and staff. Policy and Security anticipates that such outreach will be a major focus of the new IT Security officer.

The office coordinated the revision of the University's "Guidelines for Use" and produced the 2001-2002 official version of the document.

Institutional standards

During FY03, Policy and Security began to formulate an institutional standard for protection of the University's information technology resources against deliberate or accidental damage, both by outsiders and by members of the University community. Completion of the effort awaits the arrival of the new IT Security officer.

Printing and Mailing Services

The Printing and Mailing office provides a broad base of services to the University community with special consideration given to the support of Annual Giving, Development, Alumni Council and the Communications office. The office is structured to provide four cost effective services to departments of the University. The four areas of service are as follows:

- Graphics: Design and layout, film output to 2590 dpi resolution, Minolta color proofing and copying, Encad large format printing from 60 inches in width by 20 feet in length.
- Offset Printing Production: The manufacturing of a wide variety of printed work; from single color to process color, envelope and stationary, brochures and flyers, with bindery capability for perfect bound and saddle stitched books.
- Digital Networked Printing Center: Both black and white and color networked printing. The center's equipment includes the Xerox 6180 and the Xerox 2060.
- Mailing Production: Addressing, inserting and sorting for first class, third class mail and international mail. Mailing also coordinates and sends data files for variable data printing to the Xerox 6180 and Xerox 2060 for on-demand printing and addressing. Mailing is also responsible for mass e-mail notices to the campus.

Highlights

Digital color printing

Printing Services continues to use the Xerox 2060 and the Heidelberg DI to refine and improve "on demand color printing." Campus demand for color printing continues to grow. The Xerox 2060 averages 85,000 to 100,000 impressions per month and represents a large segment of the printing office business. The Heidelberg DI supports traditional color printing and the large run process color projects for the Admissions Office and Communications.

New Management Control System

After a year of product evaluations, Printing and Mailing Services upgraded the PACE print management system and has begun job tracking and time recovery on all work. All 22 workstations in the office presently run PACE and are being integrated into the

operation. E-PACE and the windows based PACE system will be integrated later in the year. The Communications office is expected to begin to use this system to track projects.

New Addressing and Tabbing System

Installed in January 2002, the new Marconi addressing and tabbing system has greatly improved third class bulk mailing. The new system efficiently moves address files into production. Annual Giving views the new system as an important initiative because it provides the ability to apply pressure sensitive postage stamps to fund-raising pieces. The system replaced the Scitex printer and feeding base, a system that was installed in 1982.

Recruiting and Training

Printing and Mailing Services continues to recruit and train a more diversified staff. During FY02, Printing and Mailing Services hired an additional designer. Skilled printing and bindery personnel are currently being sought. The full initiative awaits the completion of the Communications Office reorganization.

Telecommunications Services

Telecommunications Services provides reliable and cost-effective total telephone and voice processing services to the University. Telecommunications Services is the largest cost recovery unit within OIT.

Highlights

Work orders

During FY02, more than 4,250 work orders issued for telephone work involved some 4,750 changes to telephone service or equipment. In addition, Telecommunications Services processed 1,225 work orders for voice mailboxes.

Telecommunications infrastructure

The group provided support for 2,875 student telephone lines and approximately 7,100 academic and administrative lines. More than 14,000 voice mailboxes are in service. Current switch capacity makes 11,800 telephone lines available for use. Staff added more than 5,000 student mailboxes in September and removed them in June.

Telephone Conference Bridge

During FY01, a new service, the Telephone Conference Bridge, saved one department more than \$20,000. More than 15 departments now use that feature of our MSL-100 PBX switch. During FY02, the largest savings by a single department over commercial AT&T Conference Calling rates was \$40,000. In sum, the conference bridge has saved the University more than \$100,000 over commercial rates.

New Services

Telecommunications Services assisted the establishment of a Critical Call Center in the aftermath of September 11, 2001.

Telecommunication Services installed a new 800 service to departments. The service dramatically reduces the cost of having inbound 800 numbers point to a campus telephone number.

Outreach

Telecommunications Services updated its website and added much functionality. University customers will soon be able to sign up for services via the web.

A very successful Open House permitted Telecommunication Services to showcase the office and its services.

Voice over IP

Staff are staying current with the trend towards the convergence of telecommunications technologies onto a single platform.

Telecommunications Services is currently working with Nortel on a Voice over IP (VoIP) trial.

Vendor Relations

The Vendor Relations group is comprised of software sales, software licenses and contract management, the ID Card office and the Copier Center.

Highlights

Software Sales

During FY02, OIT's Software Sales sold more than \$250,000 in software, \$180,000 to departments, \$50,000 to students (including SCI licenses and other licenses sold through Student Select) and \$21,000 in personal sales (individual software packages sold to faculty, staff, and students).

Software Licenses

During FY02 the University renewed the Microsoft Campus Agreement. Signed for the period July 1, 2002 – June 30, 2003, Campus Agreement 3.0 now unbundles Microsoft products. Universities will now have more flexibility in choosing what software they want to include in the agreement. Princeton will keep all five products that were included in Campus Agreement 2.0 and will experience a minimal price increase.

On June 1, 2002, Microsoft rolled out Student Select as a national program. Princeton has been a Student Select pilot school. The new program permits students to buy licenses for Office XP Professional (and Standard) and Windows XP upgrades. The new Student Select agreement includes two new requirements: the signature of each student on a license agreement, and the purchase of equal numbers of license and CDs (in essence, requiring students to buy the media). In negotiations, the University is requesting Microsoft to accept electronic signatures.

The University's license agreement with Adobe required sales in blocks of ten. Not needing so many copies, departments often bought single, shrink-wrapped copies at much higher per-copy prices. Adobe has granted permission to sell single licenses. Departments are now able to buy as many copies they need of Adobe products at the best possible price.

The University licensed two new software products in FY02. In September 2001, OIT worked with the Library to sign a license for ESRI GIS and Mapping software. During the spring, OIT worked with the Politics Department to gauge interest and purchase Update Expert, a software package that automates Windows security updates. OIT purchased a 2000-user license. Departments are acquiring 1,400 copies. OIT is selling the remaining licenses through Software Sales. In both cases, volume discounts permitted OIT to negotiate better terms than the departments would have obtained on their own.

ID Card Office/Copier Center

The ID Card Office and the Copier Center moved in August 2001 from Dillon Gym to A Floor New South. In October 2001, the ID Card Office assumed responsibility, from Public Safety, for coding all door access privileges for all employees. The ID Office staff had been handling the coding only for students.

Campus Use of ID Cards

Begun in FY01 at the request of the Provost and Vice President for Finance and Administration, the University has researched and evaluated the current and future uses of the ID card on campus. During FY02, the project report recommended a plan to pay for additional positions in the central card office with income realized from the adoption of a program called SA [Student Advantage] Cash. The new program would permit students to use their ID card as a debit card on campus as well as with participating off-campus vendors. During the spring, senior university officers approved the recommendation. The program itself will begin in the fall of 2002. The program funded the new ID card position hired during the year.

Budget and Finance

Budget and Finance assists the operating units within OIT with all financial issues. The group provides accounting expertise, consolidates budget and planning activities, controls the capital assets, acts as the financial representative on funding issues, sets rates for OIT services, and ensures compliance with University rules and procedures.

Highlights

A new charging interface for PeopleSoft

In order to provide departmental managers, chairs, and principal investigators with a more effective way to gain access to University billing information, the Budget Group led a two year effort to develop a new charging interface to the PeopleSoft Financial System. OIT's Information Systems group and an outside vendor contributed technical support.

Completed at the end of June, 2002 the project went into production in July and will serve all departments in the University that need to charge another University department for a service they have performed.

Those departments who are being billed can now more easily and quickly understand the nature of the expenses incurred on the Financial Statements by "drilling down" to view the details. An electronic invoice in the University Data Mall now replaces a paper invoice that had to be sent to departmental managers, copied, and then distributed within the department. Anyone with appropriate financial security access in PeopleSoft Financials can view and print the new electronic invoices. The new design is flexible and permits future services easy access owing to the table driven design of the application. It represents a major process improvement for the administrative staff in the departments as well as a reduction in the volume of University mail.

Service Request tickets

In October, the Inventory Group, Software Support, and the Help Desk completed a joint, two-year effort to merge their inventory/billing system with the OIT Help Desk database. As a result, the Inventory Group now uses the web rather than paper as the starting point for opening a job ticket. The merger provides for a single point of entry when new jobs commence and consequently reduce the possibilities for loss or error from a second input process. As an additional benefit, OIT customers can now call only the OIT Help Desk for their Hardware needs.

Storage containers

In February, OIT installed additional storage containers at the 116 Broadmead location. The additional inventory space will support the storage of 150,000 feet of cable. The larger cable purchases will translate into lower costs through volume discounts. The Inventory Group will also have additional cable on hand to meet the increased needs of the University's building-wiring projects.

Educational Technologies Center [ETC]

The Educational Technologies Center [ETC] offers consultation and development services for faculty who wish to explore the use of instructional technology for their teaching, research, and alumni outreach. Programming expertise and an extensive background in instructional and research computing help ETC to develop tools and applications for classroom instruction and to offer consultation and other development services for faculty. ETC also offers training in the use of various classroom technologies and develops online life-long learning opportunities for Princeton Alumni in a variety of formats.

Highlights

A new location

In January, 2002, the ETC moved from the Engineering Quad to the third floor of the Frist Campus Center next to the McGraw Center for Teaching and Learning.

Almagest

Almagest (<http://www.princeton.edu/almagest/>) is a networked database and web application that describes the objects, places and people related to Slides that are used in many different courses as course related resources. Almagest was designed primarily as an educational support tool for a variety of courses at Princeton. Images and their identifying information are delivered across the internet using standard web browsers. Most slide databases are supported in a simple manner, although Almagest is a robust tool that supports many complex uses.

During FY02, there was a 40% increase in the number of courses using Almagest and a 50% increase in Almagest projects overall. There are a total of 104 projects with 62 dedicated to undergraduate courses.

Among many accomplishments, ETC put Almagest Release 2 into production in September, 2001. The East Asian Studies (Marta Hanson) Almagest database project was completed in February 2002.

In March, 2002, ETC announced two new services related to the use of digital images for teaching. First, any faculty member can now request a batch of slides to be digitized and placed on a University server. ETC staff will assist the faculty member and/or one of his or her students to catalogue the slides with a basic record. The slides can then be searched by students, organized into groupings for online display in the classroom or at student workshops.

In addition, ETC now makes 35mm slides from digital images. This service is available to all University faculty. The ETC is actively encouraging faculty who use digital images in their teaching and research to arrange for bulk uploads to the Almagest database. Once there, the faculty can organize the slides into digital lectures, post online images for study, or select files to make into 35mm slides.

Geographic Information Systems [GIS]

GIS is a powerful tool to explore information spatially. GIS software stores both the locations of features and characteristics of the features themselves. GIS users can work interactively with GIS data layers displayed on the computer screen as maps, selecting features based on their characteristics, their locations, or their proximities to features stored in other data layers.

GIS campus projects include:

- Environmental modelling and data analysis;
- Mapping population characteristics over space and time;
- Interactions of economic and public health spatial patterns to identify 'hot spots';
- Selection of 'least cost paths' for the movement of goods, services, water or wildlife;
- Analysis of alternative scenarios in site development or remediation.

ETC works closely with the Digital Map and Geospatial Information Center within the Princeton University Library. These groups jointly offer GIS training and ensure that Princeton faculty, staff, and students have sufficient GIS support for their projects. ETC staff helps faculty integrate GIS into instruction and research, and identify opportunities where GIS analysis techniques may be most appropriate. Training courses in GIS software began in October, 2001 and continued in November, February, and April.

Courseware

ETC teams worked with faculty to design instructional tools that integrate academic content, visual interpretation, and state-of-the-art computing techniques. ETC staff advise and assist members of the University community with simulation, visualization, and other academic computing concerns.

During FY02, ETC completed the following courseware projects:

- Animal Behavior Part II July, 2001
- Faustus Anatomized (Anthony Grafton) April, 2002
- What Russian Culture Teaches Us About Post 9/11 Life (Ellen Chances) April, 2002
- Tchaikovsky and the West (Caryl Emerson) April, 2002
- Western Way of War (to be mailed September 2002) June, 2002

During the year, ETC began several other courseware projects:

- Game Theory (Avinash Dixit) April, 2002
- The Nazarenes May, 2002
- Ethics of Scientific Progress (Harold Shapiro) June, 2002

Enterprise Services

Enterprise Services provides the software infrastructure and middle-tier services for OIT's server and desktop computing environments. Services provided include support for the central University web sites and backend web services; streaming video and audio services; local netnews service; e-mail, directory, and authentication services; coordination of desktop computer configuration and delivery; administrative support for job scheduling and printing, and enterprise systems management. Enterprise Services strives to deliver these mission-critical computing services to the campus community reliably and in as transparent a fashion as possible.

Enterprise Services includes the following groups:

- Collaboration Services
- Enterprise Systems Management
- Technology Integration Services
- Web Services

Highlights

During FY02, Enterprise Services continued to deliver service reliably while responding to critical needs, improving service performance, and adding new functions, capabilities, and service offerings.

Support for E-mail and other key University services

E-mail now runs on two separate servers, one for students and one for faculty and staff. Redundant mail delivery servers back each other up in the event of system failures. Authentication reduces the possibility of local mail forgery and permits users confidently to identify the senders of e-mail.

An improved mailing list server has eased the task of managing lists. A new more powerful webmail server supports the growing number of users who appreciate being able to gain access to their mail from any networked location.

The new Norton Anti-Virus Mail Gateway now prevents dozens of viruses and tens of thousands of infected mail messages from infecting computers and spreading on campus.

A self-service interface now permits individuals, or designated departmental staff, to update campus phone and office information.

Support for Campus Computing

A new web site simplifies and automates the Student and the Faculty Computer Initiatives, including internal University work-flow and the processing of orders to vendors.

The Desktop Systems Council (DeSC) provided oversight and advice on the continued coordination of more than 2,000 administrative desktops. DeSC recently recommended improved security measures, a longer replacement cycle, and continued computer price/performance improvements.

Improving web services

Last summer, a reorganization and redesign of OIT's web pages improved and simplified access to OIT information and services. During the period following September 11th, the group provided critical information to the campus and shouldered the increased load on web and e-mail systems. Television and radio news services were streamed to University desktops to permit staff to follow developments. Subsequent negotiations have permitted continued campus delivery of MSNBC.

Sustaining the infrastructure

During FY02, staff improved the reliability and functionality of network monitoring systems by upgrading server hardware and the software tools that monitor web-based systems, databases, and system log files. Staff also began to monitor campus host computers using the Tivoli NetView software.

Staff moved printing and faxing services from an unsupported platform to run in a standard Unix operating system environment. Staff also upgraded the job-scheduling software to a more secure control mechanism.

Enterprise Systems Management

Enterprise Systems Management (ESM) provides system monitoring, job scheduling, and output management services. The system monitoring and job scheduling services are used primarily by groups within OIT. The general campus community uses output management services. During FY02, ESM introduced significant new system monitoring services and implemented major upgrades to the job scheduling and output management services.

System monitoring

The IBM/Tivoli system management software is the core of the University's system monitoring strategy. The Tivoli infrastructure is well established at the University. Throughout FY02, ESM worked to extend the infrastructure to provide additional monitoring services. For example, staff installed the Tivoli Manager for Oracle software in July 2001. Staff also used the Manager to monitor the Blackboard database in September 2001 and the Educational Technology Center database in December 2001.

In December 2001, staff installed another Tivoli component, the logfile adapter, to monitor Unix system logs for reports of disk errors.

Beginning in March 2002, staff replaced locally developed software with the Tivoli Netview network monitoring software to monitor the status of host systems.

In February 2002, staff made the ESM web page monitoring service available to departments outside OIT. Four departments are taking advantage of the service.

During FY02, ESM also extended web monitoring to include web-based applications. This service was developed to monitor the Data Mall in August 2001. The service was subsequently extended to monitor Blackboard and Time Collection in September 2001 and Annual Giving in July 2002.

Job Scheduling

The Tivoli Workload Scheduler software schedules all administrative production jobs on both Windows and Unix servers. In July and August of 2001, staff upgraded this software to version 7.0. New features include a new Java-based client security program and an audit trail that ties all job schedule changes to individual users. The Java console is much easier to manage and eliminates previous restrictions on the number of users who can simultaneously access each of the application systems. It also enabled the conversion to the new security configuration begun in November of 2001. Staff completed the upgrade in January 2002 when all use of the old software ended.

Output Management

Enterprise Systems Management operates three output services: the Unix printserver, the Campus Fax Gateway, and the Dazel Output Server. In August 2001, staff moved the Unix printserver service from a platform that was out-of-date and poorly supported to a new, more reliable hardware and software platform. The Campus Fax Gateway is a custom application built on top of printserver. Since September of 2001, ESM staff have been working to convert the Fax Gateway to work with the new

printserver. The new service is scheduled to go into operation in July 2002.

In the summer and fall of 2001, ESM assisted the evaluation and implementation of the Pharos print accounting software now used to manage cluster printing. In November 2002, ESM used Tivoli's remote execution and scheduling capabilities to automate the collection of print usage statistics from cluster printers. ESM extended the service to printers in the Development Office in April 2002.

Collaboration Services Group

The Collaboration Services Group (CSG) is responsible for e-mail and related services used by University students, faculty, and staff.

Highlights

Electronic Mail

University e-mail systems handle a significant volume of electronic mail:

- Every day, more than 100,000 messages are delivered on average to 18,581 University individuals and organizations.
- Campus users send approximately 60,000 messages each day.

The average delivery time for a message sent from an on-campus computer to another is 2 seconds. Typically, message delivery to external mail systems takes less than two minutes.

During FY02, CSG installed a new mail server for undergraduate students and upgraded the University's webmail service to a more powerful and faster server.

To increase security and to insure the appropriate use of electronic mail, CSG implemented a required "log in" for outgoing e-mail services. In the near future, similar steps will secure the transmission of account names and passwords for additional University electronic services.

Working closely with colleagues in Networking, CSG implemented real-time monitoring of the servers that provide e-mail services beginning in March 2002. The figures below depict the weekly pattern for outgoing e-mail messages and messages sent to, and received from, electronic mailing lists.

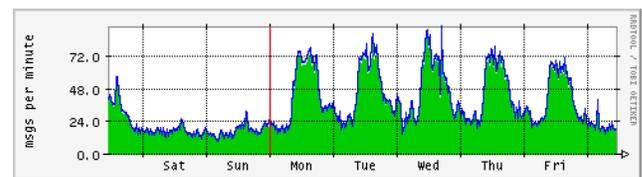


Figure 1 Typical Message Rate by Week for Outgoing Mail Service

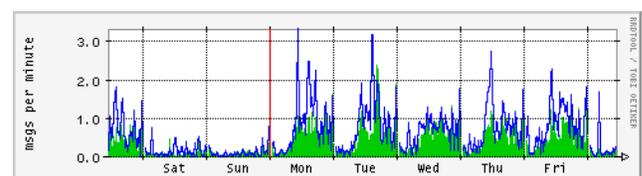


Figure 2 Typical Message Rate by Week on Lists Server

Figure 3 illustrates the pattern of student use of the e-mail server (showing the number of simultaneous connections). The number of students accessing the mail server obviously drops off dramatically at the end of the academic year.

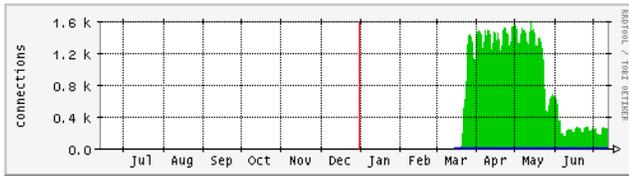


Figure 3 Student Access to Mail Server March - June 2002

The work of the University continues after graduation. In the figure below, the number of connections to the server for reading mail averages more than 1,500 concurrent connections per work day. The drop in connections during the month of March reflected the migration of student accounts to their own mail server.

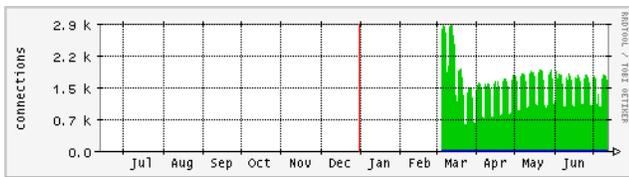


Figure 4 Faculty/Staff Access to Mail Server March - June 2002

During the year, CSG implemented Symantec's Norton AntiVirus product to scan incoming e-mail messages with attachments. The new anti-virus service has identified and captured more than 225,000 computer viruses and worms since implementation.

CSG implemented a new mailing list service based on the L-Soft LISTSERV software. The group successfully migrated more than 1,800 lists and their archives from an older list service system. The new service has an easy-to-use web page interface for managing lists and reviewing messages in the archives.

Towards the end of FY02, CSG and colleagues in other OIT units begin to test and evaluate Microsoft Exchange 2000 for integrated calendaring and e-mail services.

Technology Integration Services

The Technology Integration Services (TIS) group coordinates projects related to the maintenance and enhancement of the University's standard desktop and laptop computing environments. The group is responsible for several cross-organizational and cross-campus technology deployment projects for students (Student Computer Initiative), faculty (Faculty Computer Program), and departments (DeSC Program).

Highlights

Microsoft Windows 2000 Server

TIS staff coordinated OIT's project for the upgrade to Microsoft Windows 2000 Server (Active Directory). The six-month migration to Microsoft Windows 2000 Server (Active Directory) involved staff from across OIT's departments as well as technical

representatives from a dozen other departments, and support from an external consultant. The group met weekly to discuss and plan the upgrade. A working pilot lab, including a test Exchange 2000 Mail Server, became operational in May 2002. Cutover to the servers is planned for July 13, 2002.

Student and the Faculty Computer initiatives

Working closely with staff from the Web Services Group, TIS further streamlined the web-based systems for the Student and the Faculty Computer initiatives. Today, thanks to these efforts, information about eligible participants flows to and from authoritative University data systems.

Desktop Systems Council

The Desktop Systems Council (DeSC) provides oversight and advice on the coordination of more than 2,400 standard administrative desktops. During FY02, support staff from OIT and the departments worked to complete the migration from Windows NT 4.0 to Windows 2000 software on the DeSC computers. Owing to their efforts, the DeSC program was well coordinated with the planned July 13, 2002 upgrade of the back-end servers to Windows 2000 Server software. By the end of FY02, the vast majority of DeSC machines were upgraded to Windows 2000 and Office 2000 productivity software.

96% of the machines participating in the DeSC program are at or above the minimum standard configuration. Sustaining this infrastructure is the result of the cooperation and support of departmental managers, chairs, and departmental technical support staff across campus.

DeSC worked closely with OIT and the Department of Purchasing to obtain better pricing and responsiveness to service and delivery issues from the DeSC hardware vendor.

During FY02, the council completed several reports with recommendations for the management of DeSC computers. The following recommendations were submitted to and approved by OIT's Vice President and CIO:

- New methods and guidelines to improve security for DeSC computers;
- Support for extending the life cycle for 400-450 MHz DeSC computers through August 2003;
- Removing peer-to-peer file sharing software and other insecure means of file sharing on DeSC computers.

Web Services

Web Services provides consultation, technical support, and leadership in the creation of web-based materials and the implementation of web-based technologies. The group supports the software infrastructure that underlies the University's main web site, as well as many administrative and academic web sites.

In support of the University's web infrastructure, Web Services carries out the following activities:

- Maintenance of main University Web Servers (Hulk, Web, CampusCGI, Sweb, AVServer, Webdb, and database servers on Oracle and Storacle);
- Installation of server software (Apache, IIS, Oracle), application of patches and any other upgrades;

- Processing public inquiries that come to the University through its web site;
- Responding to web-related questions from the Princeton user community;
- Assisting in trouble-shooting web-related problems;
- Design (with Communications) and implementation of main University web site;
- Design (with other OIT groups) and implementation of main OIT web site;
- Evaluate, implement, create and/or recommend tools needed to support the University web site;
- Help users to create and manage web sites;
- Manage Indexing and Statistics services for web pages;
- Document procedures for publishing Web pages and databases at Princeton.

In addition, the group continues to offer broad web design and implementation assistance to departments, programs, and special events, as well as special purpose web and database programming assistance.

Highlights

University Events Calendar

The University Events Calendar consolidates information about all public events. Departments and student organizations maintain the information. Users can view and search brief or detailed displays of events.

In July 2001, the APT University Events Calendar Team asked Web Services to evaluate and deploy a web-based events calendar. Work on the calendar began in September, 2001. The group reviewed several calendar systems, installed and evaluated two, and finally selected the WebEvent product. In a pilot project, working with the Communications Office, Web Services enlisted several departments to enter events in the calendar and to provide feedback. Web Services redesigned the interface and made many internal changes as a result.

In May, 2002, Web Services released a prototype web-based University events calendar. The full system will be in production for the Fall, 2002. Web Services continues to make modifications and add calendars as groups request them.

WebMedia Service

During FY02, the WebMedia Service continued to provide access to hundreds of public lectures, academic language courses, class lectures, alumni courses, special events (such as commencement and baccalaureate), conferences, and sporting events. Users can select the desired format, audio, video, and flash web streams (in RealMedia, Windows Media and QuickTime formats).

Web Services completed a redesign of the WebMedia site in the new OIT format. In September, 2001, the new site began to offer a subscription service that permits users to sign up for automated e-mail notices of upcoming live WebMedia events.

In the 4th quarter of 2001, Web Services purchased the Virage video content management system (comprised of a server and two encoding systems). Virage now supports the growing volume of digital media assets generated each year. With Virage and its applications, staff can easily convert speech to text and then index multimedia broadcasts. As a result, users are able to search and display video, audio, and other digital media. Virage

includes other capabilities, including voice and face recognition, on-screen text recognition, and the scheduling/remote control of live encoding processes.

In response to customer requests for a live news service in the wake of the Sept. 11, 2001 terrorist attacks, OIT initiated a live 24-hour MSNBC news web streaming pilot project. Negotiations with MSNBC representatives resulted in the right to deliver programming over the princeton.edu network in RealVideo and Windows Media formats. A web survey gauging customer satisfaction with OIT's MSNBC Live service resulted in an overwhelming 205-11 response in favor of continuing the service.

Web Survey Facility

Web Services assisted numerous groups in using the OIT Web Survey Facility. The Princeton Survey Research Center used the Survey Facility for the following surveys:

- Survey of Princeton Faculty: Natural Sciences and Engineering
 - Facilities Survey: Facilities Office
 - Career Services Survey: Career Services Office
 - The National Survey of College Experience: Prof. Thomas Espenshade
 - European Union Survey: Prof. R. Daniel Kelemen
- Web Services also worked directly on the following projects:
- Princeton Writing Program survey: Janet Strohl
 - Conjunctivitis Survey: Dr. Pamela Bowen
 - Sept. 11 Follow-up Survey (with Jeremy Coleman Davis-Turak '04): Prof. Gilda Paul
 - Roommates Surveys: Prof. Nicole Shelton
 - Athletics Survey: Mike Cross
 - Precept Survey: USG

In FY02, the USG began to use the Web Survey facility for their student elections. The Alumni Council now uses it for their trustee elections.

Computer Purchase Programs

Web Services completed the development of new web interfaces that streamline the Faculty Computer Program and the Student Computer Initiative for purchasers, support staff, and vendors. The new sites involve template-driven designs for easy maintenance and upgrades, and tie to the databases for each program. Data is automatically updated and the new system provides automatic e-mail notification. Web Services completed the Faculty Computer Program interface in April 2002. The Student Computer Initiative enhancements were completed by July 1, 2002.

New OIT web site

Web Services designed and implemented a new OIT web site from August–September 10, 2001. Site changes include a focus on OIT services and a new logo. Web Services worked with other OIT groups to incorporate the new design and organization into their sites. The new site makes it easier for members of the University community to find information about OIT services.

Crisis Response web site

Web Services worked closely with Communications to implement a Crisis Response web site after the September 11 tragedy. Work began in the afternoon of September 11. During the following

weeks, the site was continually updated with information provided by Communications and other groups. The web site provided urgent information to the on-campus and world-wide University community.

Web Strategy Task Force

During Summer and Fall 2001, Web Services staff provided the Web Strategies Task Force with an extensive overview of the broad set of services currently offered over the web at Princeton, and served on the Task Force and its Working Groups.

Web site creation

During FY02, Web Services assisted numerous offices, departments, and University groups in creating web sites. Web Services staff created logos, website designs and templates; assisted in creation of PU-format sites; and provided training and assistance. As a result, departments can present and update information more easily. As important, University web sites have taken on a more uniform look and feel.

Web Services assisted the following departments and groups:

- Annual Giving
- Butler College
- Campus Life
- Center for Community Service
- Center of International Studies
- Class of 2006
- College Student Composition Study
- Community and State Affairs
- Dean of the Faculty
- Dean of the Loans and Receivables
- Facilities
- Graduate School and Dean of Architecture search committees
- Honor Committee
- McGraw Center
- National Survey of College Experience
- Natural Sciences and Engineering survey of Princeton Faculty
- Ombuds
- PEI
- Politics
- PPPL-NSTX
- PPPL-Theory
- Public Safety
- Presidential Installation
- Princeton Blairstown Center
- Rockefeller College

Google Search

In the Fall of 2001, OIT implemented Google's free University Search as the main University website search engine. Staff also assisted many departments in installing departmental Google searches and integrating Google into their websites. Users now have faster, more accurate, more efficient searching.

DBtoolbox applications

Developed at the University, DBToolBox is a Web-based application that permits users to develop database-driven Web applications. No Web or database programming skills are required. DBToolBox "discovers" the layout of the databases and provides a point-and-click, form-based interface for creating dynamic reports of data, as well as forms to accept data on the Web. DBToolBox can also create an Access database from a form.

DBToolBox was used to create an online system for students to apply for positions in the Residential College Advising Program. By November 2001, the initial phases were completed, including reporting for Deans. The Office of the Dean of Undergraduate Students reports that the application streamlines the application process.

Staff used DBToolBox to create a registration form for the Program in Law and Public Affairs conference in February, 2002.

Staff used DBToolBox to create a Writing Program scheduling system. The new system permits on-line sign-up and scheduling for students and program faculty. The program replaces an inefficient and staff-intensive paper system and provides 24-hour student access. The new system was completed in February, 2002.

Information Systems

Information Systems provides a reliable, cost-effective information technology infrastructure in support of the University's academic and administrative efforts. IS also develops and supports administrative applications. During FY02, Information Systems concentrated its efforts on the following goals:

- Supporting the data network that serves the full range of the University's academic and administrative mission;
- Sustaining highly-reliable, responsive, and consistent computing, database, and file services by installing, maintaining and supporting central hardware and operating systems for both administrative and academic computing;
- Supporting and facilitating the successful implementation of Partnership 2000;
- Providing a single enterprise-wide computing environment for administrative systems;
- Facilitating the use of central information resources for management decision-making;
- Maintaining current information systems at the highest possible operational level;
- Encouraging technical staff to take advantage of training resources and, using many approaches, to encourage and motivate staff.

During FY02, IS made significant progress toward many of these goals. Highlights include:

- Enhancing the coverage and quality of the networking infrastructure;
- Providing redundancy for critical services;
- Completion of major administrative information systems;
- Development of the final architecture for future administrative systems;
- Implementation of additional reporting tools for data retrieval for the campus;
- Implementation of monitoring for critical services;
- Considerable training for Information Systems staff.

Highlights

Partnership 2000

During this final year of Partnership 2000, Information Systems had the responsibility of providing technical support for the remainder of the P2K projects and reducing the size and cost of the IBM mainframe.

Among the key applications delivered during FY02 were Time Collection, PeopleSoft HRMS, Departmental Managers Desktop (DEMAND), Housing, PeopleSoft Graduate Student Status, Departmental Charges, Assets & Equities, and the last phase of Stripes, the Development application.

Servers

In the infrastructure area, IS staff improved the quality and quantity of the servers under the group's management. IS now supports more than 200 Unix Servers, 100 NT servers, and 100 Oracle database instances. The implementation of redundancy in the administrative systems database environment has significantly improved quality.

Network infrastructure

During FY02, IS improved the University's network infrastructure by providing dedicated and secure network bandwidth. The University has moved to new providers for commodity internet and Internet 2 traffic in order to increase available bandwidth while reducing total cost.

Administrative Application Support

The Administrative Application Support Group is comprised of five teams. The Production Support Team is responsible for the maintenance, enhancement and operational support for all of the University's production administrative systems. The Production Control Team is responsible for the Administrative Production Environment, including Operations Staff, and facilitates the transition of system from development to full production. The Data Mall Team creates and maintains Data Mall Stores for Administrative Applications. Documentation and Standards Team develops user documentation for systems in development. The Training Team provides training for both administrative users as well as technical staff. In addition, members of the training team support to the Partnership 2000 effort.

Highlights

Production Support Team

During FY02, the Production Support Team continued to provide operational support for all existing Administrative systems. The team upgraded the PeopleSoft financials system by installing "Service Pack 2." The PeopleSoft HRMS system consisting of Human Resources, Payroll and Benefits Administration went live in June, 2001. Towards that end, the team stabilized all 60 internal and external interfaces. The team applied PeopleSoft fixes and made the changes required for the fiscal year end. The application successfully produced 12,000 W-2 and 3,000 1042 forms for the Payroll office.

During the year, the team made the online and batch changes required in PeopleSoft to support "Open Enrollment" of benefits for approximately 5,000 employees and retirees. The team completed numerous reports for Human Resources and the Dean of the Faculty. The team upgraded and modified the Student Employment system.

The Registrar's office scheduled the Fall and Spring classes for the 2001/2002 academic year using Schedule25 and Resource25 interfacing with PeopleSoft CIS. The Frist Complex scheduled 14,433 special events and meetings (up from 8,400 during FY01). The team upgraded the Campus Receivables System to Oracle 8. The team rewrote all Campus Receivable interfaces and removed the system from the mainframe. The team migrated all remaining mainframe systems to a MP2000 platform that is one-sixth the size of the previous mainframe.

Production Control Team

During FY02, the Production Control Team established a secure, authenticated Job Request and Monitoring System and Migration Request and Monitoring System. During the year, the team submitted and monitored more than 34,000 jobs on the mainframe and/or Unix environment. The team also migrated nine systems onto PVCS, a source control and repository system.

Data Mall Team

During FY02, the team migrated the Data Mall to new servers and added a development instance. As a result, Data Mall customers are experiencing a significant improvement in response

time. The team also created a development area that will improve the testing environment. In addition, the Diebold Housing System went live in May. The Housing Office now uses a package rather than the mainframe.

Documentation and Standards Team

The Documentation and Standards Team developed "quick reference card" documentation for the 300 users of DEMAND. The team developed documentation for the 30 Graduate School Office users of the PeopleSoft Graduate Student Records System. The team also converted all of its documentation from Microsoft Word to FrameMaker. As a result, the team created PDF files and placed all of the documentation online for easier access and viewing.

Training Team

During FY02, the Training Team updated and delivered training for CIS and Graduate Admissions. The team trained more than 200 staff in CIS and 45 staff on the Graduate Admission System. In addition, the team trained more than 350 staff in the use of the University Financial System. The team trained 175 staff to use the Data Mall. During the year, the team also led seven classes on the use of the Time Collection system as well as six classes for Departmental Managers in the use of the PeopleSoft HR System.

Administrative Systems Integration Group

ASIG integrates the multiple computing environments that support Princeton's administrative applications into a single comprehensive Princeton-wide computing environment. ASIG has taken the lead in Java development of administrative systems, in implementing a portal for departmental managers, and in taking steps to make PeopleSoft more user-friendly. All of these activities are expected to result in improved services to University users, and in turn, to permit them to serve the University more efficiently.

The primary tasks of the group are:

- To provide application "middleware" such as security, messaging, database access, and computer architecture;
- To transfer knowledge in new technologies to Information Systems staff by providing basic training in these technologies;
- To research and evaluate new technologies and tools.

Highlights

Time Collection

The new Time Collection system went live in July, 2001. Time Collection is now a stable, production system that pays approximately 5,000 employees (biweekly, casual and student) every other week. The system incorporates more than 250 calculation rules that cover six unions and business rules specific to the University.

DEMAND

DEMAND (Department Manager's Desktop) provides a computing environment for academic and administrative managers to access and process information directly from a variety of sources including central administrative applications, the Princeton Web, the Princeton Data Mall, and department-specific applications or resources. DEMAND is intended to help streamline business processes and provide an environment to orient new staff to the University's administrative processes – all in one website. By the end of FY02, there were 280 users of the DEMAND portal.

Project Development Group

The Project Development Group provides technical resources for the replacement of all administrative systems. Throughout the effort, the group seeks improvement and innovation of the University's administrative processes and services.

Working closely with business partners, the group plans, schedules and prepares all projects for transition to steady-state.

Highlights

Stripes (Alumni Records/Development)

STRIPES, a new client/server system for Alumni Records and Development, is being developed to improve the productivity of volunteers and staff involved in alumni relations and fundraising.

The first phase, STRIPES I replaced full data inquiry, reporting, prospect, and event management. STRIPES II has the following objectives:

- Replacing the Advance/IDMS mainframe system by moving biographic and gift data maintenance tasks to Advance client/server;
- Achieving efficiencies with internal operations and in data exchange with other administrative systems;
- Providing data access for the alumni community at large and alumni volunteers through the Advance Web Community.

In order to meet these objectives, the STRIPES II project was itself divided into 4 phases:

Phase I: Additional reports for front-line fundraising staff

Staff completed this first phase in November, 2000.

Achievements included an automated re-alignment of the prospect pool and re-engineering of associated reporting systems to support post-campaign and mini-campaign fundraising initiatives.

Phase II: Implementation of Gift Stewardship

In March, 2001, staff delivered the second phase.

Deliverables included market value reporting for planned giving and extensive automation of the scholarship stewardship program. The automation is expected to save at least 2 weeks of staff time in letter production and tracking of award status. Staff also implemented an acknowledgement subsystem using a seamless interface from STRIPES to a departmental Access database. The

new system will support additional recognition of \$1000+ Annual Giving donations,

Phase III: Biographic and Gift maintenance and associated interfaces

During FY02, the group completed Phase 3-Biographic and Gift Internal Processing. The first deliverable was a policies and procedures guide for data maintenance, accessible via RoboHelp. Vastly improved proofing subsystems were implemented to reduce data errors and to improve staff efficiency. Staff developed reporting and query functions in order to support data research and quality assurance tasks. The new functions have consolidated the current report inventory. Interfaces were developed with Campus Community, PeopleSoft Student Records, and University Financials. The result is a substantial decline in paperwork, improved workflow, and a higher degree of data synchronization.

Phase IV: Advance Web Community (AWC), year-end reporting and production cutover

The group is also completing Phase 4-Year End reporting and Events Management(which will manage alumni events) and Phase 5-Advance Web Community Development (which will provide access for the alumni community). AWC will end all reliance on the University mainframe in the Alumni/Development business areas.

Department Charges (Interdepartmental Billing)

The group completed development of the Interdepartmental Billing System. Production is scheduled for July, 2002.

Housing

During FY02, the group converted student data, loaded new graduate and undergraduate student data, and prepared for cut-over to production in July 2002.

PeopleSoft Student Administration

The PeopleSoft Student Administration Project implemented an integrated Student Information System for the Office of the Registrar, Student Life, and the Graduate School. The new system, which went live June 2002, replaces IDMS and MS Access components of the former system. The system includes Admission, renewal, and financial support for Graduate Students.

Assets & Equities

The new Assets and Equities system will manage University investments. The Office of Investments will be able to use the new system to track the performance of the investments, to ensure that the funds are used for specific purposes as specified by donors, and to re-allocate funds as necessary to meet the given objectives.

The former Assets & Equities system existed in an IBM mainframe environment. The new system runs on a Unix server using an Oracle database. The web-based, Java application will permit users to employ a Graphical User Interface environment. During FY02, the group initiated parallel testing and implemented all remaining fixes. By the end of the fiscal year, the system was in production.

PC Systems

The PC Systems group provides a stable and reliable development and production database environment. The PC Systems group supports the shared Microsoft Windows NT and 2000 servers for file sharing. The group also provides general PC system guidance as well as support for the remaining Novell servers. The group works with others throughout OIT to provide a platform on which to build systems and services offered to the University community.

During FY02, the group supported several major project implementations and post production shakedowns. Staff assisted with the creation of the development Data Mall environment, the move of the majority of the University's databases to new hardware with a new operating system, infrastructure improvements such as streamlined backups and an upgraded Oracle Names Server, and PeopleSoft support, including PeopleTools 7.62, UFINSI SP2 and Student Records.

PC Systems is responsible for 80 central systems with more than five terabytes of disk space. The central printing support provides coverage for more than 400 campus printers. During FY02, PC Systems increased the number central servers by 26 to a total of 102.

Database Administration

The DBA staff supported 35 different applications, between 90 and 100 databases, three different database management systems (Oracle, Sybase, and IDMS), and the Tuxedo database related software on 20 database systems, encompassing approximately a terabyte of disk space.

During FY02, the group deployed its first Storage Area Network (SAN), Solaris 8. The group also deployed Sunfire E4800 computers, Netscreen firewalls, and Alteon switches.

The Unix staff supported both the administrative and academic central systems on more than 210 systems, with a total of approximately 20,000 accounts. In-use online disk space is approximately 5 terabytes.

Network Group

The Network Group provides and maintains a reliable, cost effective data network capable of meeting the University's academic and administrative needs. The primary tasks of this group are:

- To ensure the correct and efficient operation of the campus network;
- To maintain the University's access to the Internet and other external networks;
- To manage the various remote access facilities;
- To evaluate new network technologies for deployment on the campus.

In addition, the Network Group works closely with other OIT groups, as well as academic and administrative departments, to assess network-related needs and to apply network technologies to address those needs.

The campus network, the foundation for electronic mail, world wide web access, scientific collaboration, and campus client-server applications, has approximately 20,000 hosts. In addition, approximately 1,530 people per month connect to the campus via OIT's dial-in remote access service.

Highlights

Network Upgrades

During FY02, the Network Group has continued to upgrade the network infrastructure within campus buildings from shared to switched Ethernet. The University has also extended the Dormnet network to living spaces at the Lawrence Apartments and the graduate student annexes on Dickinson Street.

Microwave to Forrestral and Chambers Street

The University installed a 100Mbs replacement for the 10Mbs microwave link to connect the university campus and the Forrestral campus. The new link supports the activities of the Forrestral campus and the new Recap facility. The University also installed a new 45Mbs microwave link to 22 Chambers Street, the new location of the Communications Department.

Internet Connectivity

The University increased its Internet bandwidth from 50Mbs to 70Mbs by contracting with two commodity Internet service providers, AT&T (at 45Mbs) and Fastnet (at 25Mbs) which share the campus Internet load and provide automatic fall-over in case of failure. The University has also moved its Internet2 connectivity from the vBNS network to the MAGPI gigapop at the University of Pennsylvania. Both the Fastnet and MAGPI connections are via a fiber network provided by Blair Park, a supplier of "dark fiber."

Backbone Cell

The University created an alternate machine room location at New South. Redundant services such as DSN (Domain Name Service) were moved to the New South machine room. The effort aims to place critical network services at New South in order to increase the overall reliability of campus computing services. The backbone cell is an incremental step towards implementation of a disaster recovery plan for the campus computing facilities.

Traffic Shaping

There was a dramatic increase in Internet bandwidth utilization at the beginning of FY02 owing to student peer-to-peer file sharing. Several OIT groups worked together to develop the needed policies and technical solutions to control the traffic for specific applications.

Mobile IP

During the year, the Network Group implemented a number of changes to the campus Mobile IP service. Changes included the automated re-registration of machines that move from one subnet to another and the implementation of Mobile IP for Dormnet. In addition, the group provided open network access during reunions in order to permit campus visitors to use their own personal computers to gain access to the network.

Computer Security

Throughout FY02, the Network Group has been involved in the detection of compromised campus hosts. A compromised host will frequently take advantage of the University's Internet connectivity to supply large amounts of unauthorized data to Internet clients. The Network Group has developed tools and procedures for dealing with such cases. Staff have also attempted to work with the campus to inform people about the available options for creating a secure computing environment.

IT Architect

The IT architect has responsibility for defining the strategic direction of IT architecture at Princeton and providing a framework for the efficient integration and cooperation of computing systems and functions. In support of distributed applications at the University, the IT Architect closely monitors and guides the design and implementation of an information architecture.

The IT architect has helped to guide the transition off the University mainframe. The Systems architect will also examine the technical ramifications of equipment moves resulting from any significant changes in OIT space allocations.

Highlights

Campus Community and LDAP

The largest effort during FY02 has been the integration of Campus Community into the process for the automatic creation and deletion of computer accounts in the CARproc process. In addition, Campus Community is now being used as the authoritative source of information for inclusion in the Campus LDAP (Lightweight Directory Access Protocol) Directory.

The LDAP directory is used for storing information about people, e-mail delivery information, and other data. The University's incoming ("IMAP") and outgoing ("SMTP") electronic mail systems use LDAP extensively for authentication, vacation messaging, quota, and message delivery information.

Members of the campus community can now use an LDAP directory self-service web page to update their personal information (including office address, telephone number and fax number). These changes are fed automatically to Campus Community. The University Register A-Z section was produced directly from Campus Community, drawing upon the name, title, and department information from PeopleSoft HR and upon the office address in LDAP.

The Alumni LDAP authentication directory was successfully put into production and is being updated weekly from Alumni Records. Alumni are now able to authenticate against this directory when they access the Alumni portal for TigerNet services and when they sign onto the BlackBoard courseware system.

Other Projects

The IT Architect has also been heavily involved in the design of a Public Key Infrastructure at Princeton, in planning for the deployment of Active Directory to support Windows 2000 clients and servers, and for deployment of a Kerberos-LDAP authentication infrastructure for the University.

Partnership 2000

The University has made a significant investment in the replacement of administrative systems through the Partnership 2000 effort. It is important to realize that the new system implementations are only the first step in realizing the expected benefits. The University will continue to seek opportunities to leverage the distributed computing and integrated data capabilities that have been the guiding principles of Partnership 2000.

Highlights

P2K implemented automated classroom scheduling using the Resource25 and Schedule25 software. In July 2001, the new classroom scheduling tools were integrated with PeopleSoft Student Administration and the Facilities Space Management system (Archibus).

In October 2001, P2K implemented the final phase of the new Development Advance client-server system. The implementation of the alumni web portal, Advance Web Community, is in the final stages of testing. Deployment is on schedule for Fall, 2002.

P2K implemented a new browser-based Assets & Equities investment management system in January 2002.

The new Departmental Managers Desktop (DEMAND) Uportal application will provide University staff with easier access to administrative applications, documentation, policies and procedures. Selected department managers gained access to the new system in September 2001. The system became available to all department managers (and/or their designates) in February, 2002.

OIT “unplugged” the IBM mainframe over the weekend of April 27-28, 2002. A new MP2000 enterprise server is running three student systems (Undergraduate Admissions, Financial Aid and Student Records) until the new client-server systems are available to replace them.

In May, 2002, Facilities evaluated, selected and implemented Diebold Housing software to replace their mainframe housing application. The University plans to deploy a web housing application by Spring 2003.

In June 2002, staff upgraded the Coeus Grants Management system and are planning for a phased distribution of the new system to the academic departments.

The Treasurer’s Office developed and implemented a new Operating Budget System that replaces mainframe functionality and integrates operating budget data directly with PeopleSoft Financials.

The second and final phase of Campus Community, tying the new system to Alumni Records, was completed in June 2002. Campus Community, which now has 12 interfaces to administrative applications, maintains bio/demo data electronically.

A new browser-based Departmental Charge system will replace several fragmented inter-department charge systems. Customer bills will be delivered through the Data Mall by July 2002.

Student Systems

During FY02, the University re-directed the Student Systems implementation effort. Rather than proceeding immediately with the remaining PeopleSoft Student Administration modules, the University will attempt to deliver specific functional improvements as quickly as possible. Staff implemented all Graduate School student record processing before the end of the academic year. Staff implemented the PeopleSoft Relational Data Mart (RDM) as the student reporting repository for the Graduate School. Easy-to-use reporting views and the Cognos reporting tools permit the Graduate School to generate reports directly.

Student Bio/demo Updates and Graduate Student Registration will be deployed in September 2002. Projects to implement a new Undergraduate Admissions Application (Part I of form) and a new Undergraduate Financial Aid system are underway. Web applications for both systems will be available to prospective students in September 2002. A Web Course Selection system will be deployed in November 2002.

Project Managers Team [PMT]

From the inception of Partnership 2000, the Project Managers Team (PMT) has been a working group comprised of key OIT directors and managers and the business project managers who were responsible for implementing the new administrative systems.

The PMT continues to support the application and data management principles established under Partnership 2000. The ongoing objectives of the PMT are:

- To identify, assess, and prioritize mandatory maintenance (i.e. regulatory updates, software upgrades, service packs) and enhancements (i.e. to fill gaps in current functionality and/or deliver new functionality) to administrative systems;
- To coordinate administrative requirements across offices and departments;
- To facilitate activities that foster the improved use of administrative products and services at the University.

Highlights

During FY02, the PMT supported the completion of the Partnership 2000 initiative and compiled a series of documentation and plans for the review of the Administrative Systems Planning Group.

The documentation/plans included the following:

- Partnership 2000 Accomplishments (and identification of “gaps”);
- Administrative Systems User/Customer List;
- Administrative Systems Application Architecture;
- Comprehensive listing of proposed enhancements with a 2-3 year planning horizon;
- Recommendations for the FY03 project slate.

Planned for Replacement

Following is the inventory of all University administrative systems. The first section lists systems that have been replaced, unless otherwise noted. The second section lists new systems that were anticipated and implemented. The third section lists those systems that were not anticipated, but were implemented during Partnership 2000 following approval from the Executive Steering Committee.

Advance
Accounts Payable
Assets & Equities
General Ledger
Operating Budget
Purchasing
Financial Reporting
Campus Receivables

- Medical Benefits
- Mortgages
- Parental Loans
- Rents
- Scholarship
- Student Accounts
- Student Loans

Departmental Charges
Human Resources
Benefits
Payroll
Labor Accounting ⁽¹⁾
Academic Advisement ⁽¹⁾
UG Admissions ⁽¹⁾
Course Information
Classroom Scheduling
Financial Aid
Graduate School
Student Records ⁽¹⁾
Housing
Telephone Management

28 Count

⁽¹⁾ Replacement postponed

New – Anticipated

Advance EIS
Campus Community
Data Mall
DEMAND
Grants Management

5 Count

New – Unanticipated

Advance Web Community
Benefits Administration
Event Scheduling
Time Collection
WebHire
Web Bio/Demo Updates
Web Admissions Application
Web Student Registration
Web Course Selection

9 Count

Support Services

Support Services provides direct customer service for the University's information technology infrastructure. Support Services is comprised of four groups, Desktop Computing Support (which is further divided into software and hardware groups), the Help Desk, Student Computing Services, and Distributed Computing Services.

During FY02, each of these groups has had significant accomplishments. Each group has helped more customers than ever before, worked more efficiently, and consistently scored high ratings in customer feedback. Among the many accomplishments, Desktop Computing Support expanded the campus network to reach the Lawrence Apartments. The Help Desk increased their open hours to 24-hours a day, 5 days a week. Student Computing Services implemented a print accounting system. Distributed Computing Services began a certification training program for IT staff.

Desktop Computing Support

Desktop Computing Support provides quality and timely walk-in and in-office hardware and software computing support as well as cable television services to the campus community. Related services include in-depth computing needs analysis and guidance on strategic planning. In addition, the group provides analysis and advice on new technologies and determines the best methods for providing ongoing support.

Highlights

During FY02, the Desktop Support group responded to an increasing number of requests for service. More than 7,000 total work “tickets” tracked progress and resource commitments. Most requests called for assistance in setting up, upgrading and repairing microcomputers and printers, installing and debugging software, and activating network and cable television services in offices, classrooms, and dormitories.

In addition to these core services, the group has made important contributions towards various special projects:

- The continuing process to upgrade the network infrastructure campus wide;
- The completion of a project to migrate all DeSC computers to Windows 2000;
- In collaboration with many other groups, the migration of thousands of user nodes from ADSM to TSM for daily backup services.

In support of the Hardware and Software support operations, staff attended many training sessions. The group purchased new tools and computing resources. An upgrade of the Hardware Support inventory/labor accounting system merged this system with the Help Desk’s OPM system for a significant improvement in job tracking functionality.

Software Support

Customer Contacts

During FY02, Support Services responded to a total of 2,983 support issues and projects. The top five departments served were:

OIT	547 projects (20.5 %)
Mechanical and Aerospace Engineering	270 projects (10.14%)
Office of the Dean of Undergraduate Students	177 projects (6.64%)
Athletics	173 projects (6.49%)
History	147 projects (5.52%)

DeSC support

In conjunction with Hardware Support, Support Services replaced 262 older DeSC machines with new Windows 2000 machines and upgraded 151 DeSC machines from Windows NT to Windows 2000.

Support Services also assisted Technology Integration Services in the testing of DeSC images and related support issues.

Networking

Support Services assisted Network Systems with subnet expansion at Firestone Library and the subnetting of 22 Chambers Street.

Support for network applications

Support Services assisted the network backup system migration from ADSM to TSM. Staff manually migrated approximately 1,000 machines from the old ADSM server to the new TSM server either remotely or through an office visit. Staff worked with the OIT Help Desk to develop a reporting system to help support personnel determine if machines had been successfully migrated to the new TSM servers.

Staff assisted Hardware Support with the migration from XBASE inventory/billing tracking system to a client/server-based system that ties in with the Help Desk’s OPM system.

Support Services assisted several users with migration to authenticated SMTP email. Staff also assisted OIT Partnership 2000 with the testing of Diebold “room-draw” software. And staff worked with PC Systems to upgrade the related servers to Windows 2000.

Support for departments

Support Services assisted many departments in cleaning compromised (mostly non-DeSC) Windows machines.

Support Services continued to assist Public Safety in upgrading their Fire Alarm system.

The group developed a plan to help Health Services and Risk Management permit a third-party workman’s compensation claims manager (PMA Group, Mt. Laurel, NJ) to have remote access to the Health Services OHM system.

Support Services also assisted Public Safety, the Alarm Shop, and OIT with the support and configuration for the new card access system. Staff developed a windows image for card access terminals.

Hardware Support

Building Renovation Support

During FY02, the group provided support to the Facilities Planning Office during the renovation of campus buildings. The effort involved removing and later replacing or upgrading data wiring, network equipment, and computer clusters. The list of renovated areas includes: Little Hall, New South, Robertson Hall, Friend Center, Green Hall, Guyot Hall, McCormick Hall, 22 Chambers, Lawrence Apartments, Graduate Annexes, East Pyne, Dod Hall, Cuyler Hall, and Spelman Hall.

Network upgrades

Work continued during FY02 to rewire and upgrade the networking infrastructure in buildings that are not currently or imminently scheduled for renovation. In some cases, the group installed a parallel cabling system next to old wiring. Once the new infrastructure is in place, technicians go room by room, cutting out the old wiring and installing the new. Buildings with upgraded network wiring include: Architecture, McCosh Hall, Gauss Hall, Pyne Hall, Holder Hall, 1938 Hall, Dodge Osbourne, 1915 Hall, Lockhart Hall, All Eating Clubs, Walker Hall, Old Grad College, New Grad College, and Edwards Hall.

Hardware Support continued to add data connections to all Registrar-controlled classrooms.

In support of the move of the Communications Office from Stanhope Hall, Hardware Support installed a 45meg microwave connection from the Holder Hall tower to 22 Chambers Street.

Dormnet and Dorm video

During FY02, the group installed 352 Limited Basic, 609 Basic and 152 Total video television connections. More than 300 video repairs were completed during the year.

The group also replaced missing hub components in dormitory rooms in August, 2001 and completing more than 150 Dormnet repairs during the year.

Wireless Computing

During the year, the group setup wireless computing zones in the following locations

- Frist Lawn - between Frist and Guyot;
- Robertson Hall - 4th floor and main lobby;
- Friend Center - full coverage of basement and first floor;
- Tower Club - full coverage of the entire club.

Help Desk

The OIT Help Desk provides quality and timely telephone, appointment, e-mail and web-based computing support for the University and serves as the single point of contact for all campus computing inquiries.

Highlights

Customer contacts

During FY02, the OIT Help Desk continued to provide timely and professional customer service to the campus community. The Help Desk recorded a 16% increase in direct customer contacts from FY01. Help Desk staff achieved an 85.3% call pickup rate with an average time to answer of 37 seconds. Staff administered OPM, OIT's communication tool for customer support. OPM currently has 43 active groups, using a total of 240 queues and 466 users.

Support for services

Help Desk staff continue to provide training for new SCAD/DCS members. The Help Desk absorbed the maintenance and support of the University's LISTSERV e-mail list service from Enterprise Services. Help Desk staff created a user-friendly Princeton "look-and-feel" for the LISTSERV web interface (<http://lists.princeton.edu>). The Help Desk staff created more than 2,000 e-mail lists since taking on the task in December, 2001. The Help Desk also absorbed the creation, maintenance, and support of OnTime calendar accounts from Enterprise Services.

The Help Desk supported campus e-mail users through the change to authenticated SMTP. The first day of the change in the e-mail infrastructure represented the single largest volume the Help Desk has recorded. On March 26, 2002, the Help Desk

recorded a call volume of 766 calls to the Help Desk. Of those calls, only 67 (9%) were not answered by a consultant. The average time to answer on that day was 58 seconds.

In collaboration with the Partnership 2000 office, the Help Desk launched a "one-stop shopping" web site (<http://helpdesk.princeton.edu/asa>) for administrative systems access, information, documentation, training, and support.

Help Desk staff also supported the inaugural year of the Faculty Voting online system.

Extended hours of operation

During FY02, the Help Desk expanded their hours of operation of telephone and e-mail consulting from business hours (Monday – Friday, 8:30am – 5:00pm) to 24 hours per day, five days per week (Sunday 5:00pm – Friday 5:00pm). Staff also decreased the length of wait time for e-mail consulting from 24 hours to approximately 6 hours.

Knowledge Base

The Help Desk provides assistance via direct assistance (e-mail consulting, telephone assistance, appointments) and through a searchable knowledge base of answers at helpdesk.princeton.edu.

During FY02, the Knowledge Base web site received 7,609,635 hits from 90,899 unique IP addresses, representing 315,404 visits (Visits are quantified as a series of hits separated by no more than five minutes from non-Help Desk machines). All of these Knowledge Base statistics represents increases over FY01.

Automatic Call Distribution (ACD) Statistics

Group	Calls Recv'd	Calls Answ'd	% Answ'd	Calls Aban'd	% Aban'd	X'fer to Vmail	% X'fer to Vmail	Avg Time to Answer	Avg Time to Aban'd	Avg Talk per Call
Technical Consulting	34,157	29,981	88%	2,952	9%	1,168	3%	0:37	1:29	4:57
Accounts/Passwords	7,034	5,452	78%	698	10%	784	11%	0:26	2:35	2:03
Univ Biz Apps	8,262	6,760	82%	803	10%	406	5%	0:31	1:56	4:06
Seasonal	734	609	83%	66	9%	57	8%	0:59	2:08	4:34
Total	50,187	42,802	85%	4,519	9%	2,415	5%	0:35	1:44	4:26

Student Computing Service

Student Computing Services provides access to public workstations and common printers to facilitate the academic use of technology and to provide easy, reliable access to information in public spaces. Student Computing Services also provides direct computing support for students in their dorms.

Highlights

Support for Computer Clusters

Student Computing Services maintains computing and printing facilities in 27 separate buildings, some with equipment in multiple locations. At the end of FY02, the University's computer clusters contained a total of 271 Windows machines, 35 Macintoshes, 20 UNIX workstations, 34 printers, and 7 scanners.

During FY02, six new clusters were opened, all in time for the start of the academic year. Five of the new clusters are in the Friend Center. Three of these clusters contain a total of seventy-seven new IBM laptops. One cluster contains twenty new SunBlade 100s UNIX workstations. And one cluster provides twenty SGI Windows machines redeployed from a cluster in the E-Quad. The three laptop clusters are classrooms/clusters. The Registrar's Office and OIT share the responsibility for these facilities. Four clusters in the E-Quad were closed when the new facilities opened.

The sixth new cluster, in Hibben Magie, contains 17 Dell PCs for the use of the faculty, staff, and students who live there.

Print accounting

In September, 2001, Student Computing Services implemented UnipriNT, a print accounting system. Students can send as many print jobs to the printserver as they want, but they must select the document they want to print at the printer. The result has been a 10% reduction in pages printed. During FY02, 5,941,063 pages were printed on SCS cluster and dormitory printers.

Cluster upgrades

Student Computing Services clusters continued to use Windows 2000 as the operating system on the Intel based machines. The cluster Macintoshes were upgraded to OS 9.1.

Most of the cluster hardware upgrades occurred during summer 2001 in preparation for the 2001-2002 academic year. In addition to the opening of the six new clusters, staff installed new Dell PCs in the Lower Madison and McDonnell clusters. During the spring, staff upgraded the SGI PCs in the Friend cluster with high end Dell Precision 340 workstations.

Residential Computing Consultants

During FY02, 33 students worked as Residential Computing Consultants (RCCs). The RCCs provided computing support to their peers in the dormitories, including the Graduate College, Lawrence Apartments, and the Graduate Annexes. Of this group, 20 were new RCCs at the beginning of September. Prior to the start of the academic year, the new RCCs took part in a two-day intensive training program. During the first full week of classes, the RCCs visited every room in the Residential Colleges to ensure the successful connection to Dormnet of all first and second year students. In addition to this outreach, RCCs responded to 2,077 tickets opened in the job tracking system—the class of 2001 requiring the least help, the class of 2005 requiring the most.

Distributed Computing Services (SCAD and DCS programs)

The mission of the SCAD and DCS programs is to provide a link between departmental computing support and OIT. This is done through a variety of methods including: recruiting of department IT staff, training of new staff, ongoing professional development, staff assessment, infrastructure assessment, and back up support.

Highlights

During FY02, the SCAD and DCS programs recruited a new IT staff for Facilities and provided on-campus training leading toward MCSA (Microsoft Certified System Architect) certification for 40 SCAD, DCS, and OIT staff.

SCAD

Support for Computing in Academic Departments (SCAD) complements OIT central support by providing a higher level of individualized advocacy and attention to administrative and academic departments. Departmental consultants participate in monthly meetings that address common concerns and issues related to campus computing. The group has priority access to the OIT Help Desk, special opportunities for training, and access to OIT's knowledge base and tracking system. The SCAD program has a total of 47 departments, represented by 38 staff members. During the past year the following departments joined the program:

American Studies Program
Bendheim Center of Finance
Center for the Studies of Religion
French and Italian Languages
Council of Humanities
Princeton Environmental Institute
Spanish & Portuguese Languages

Distributed Computing Support (DCS) program

Participation in the Distributed Computing Support (DCS) program, the parallel program to the very popular SCAD program, accelerated during FY02. Twenty-nine DCS staff members are involved in support of 18 University departments. The following departments joined the program in FY02:

Art Museum
Dinning Services
Environmental Health and Safety
Facilities
Financial Systems Support
Index of Christian Arts
JSTROR
Program in Science and Global Security
Telephone Office
University Financial Systems

SCAD and DCS training programs

The SCAD and DCS programs provided a record amount of training during FY02, including:

MCSA Training (Jan – Dec 2002)
Windows 2000 Networking
Basics Linux
Advanced Linux
Advance Access
Dreamweaver (two sessions)
Advance Dceanweaver (two sessions)
Graphics Applications
The Mac (two sessions)
Mac OS10 (two sessions)
Mac OSX (two sessions)
Windows XP Professional
Windows 2000 Server
Update Expert
Active Directory
Perl
XML

The SCAD and DCS programs also coordinated campus-wide end user training for the Spring semester and another series of workshops for the summer. Titles for those workshops included:

Intro Word
Intermediate Word
Advance Word
Mail Merging in Word Documentation
Intro Dreamweaver
Intro to Access
Intermediate Access
Advance Access
Access Report and Design
Access Advance Queries
Mail Merging in Access
Intro to Excel
Advance Excel
Intermediate Excel
Intro to PowerPoint
Intermediate PowerPoint
Advance PowerPoint
Intro FrontPage
Intermediate FrontPage
Advance FrontPage
Intro to Excel
Intermediate Excel
Advance Excel
Intro Photoshop
Advance Photoshop
Outlook

